



Science News-Letter

The Weekly Summary of Current Science

Reg. U. S. Pat. Off.



A Science Service Publication



Edited by Watson Davis
Vol. XI No. 324

10¢ a copy \$5 a year
June 25, 1927

EVOLUTION

Man's Age Now Set at Millions of Years



PROF. HENRY FAIRFIELD OSBORN, President of the American Museum of Natural History, in New York City, who holds that man is not descended from an ape-like ancestor. Dr. Osborn is the author of "Men of the Old Stone Age," and other works on the prehistory of man.

By WATSON DAVIS

Whence and when came man? This question, particularly since the time of Darwin, has raised as much controversy and debate as the more unsettled question: Whither goeth man?

Tennessee anti-evolution laws and fundamentalists notwithstanding, scientists today are agreed that man is an animal, that he is a mammal, that his brain and his body are much like those of the rest of the animal world. The roots of man extend into a rich and arduous past and his family tree traced back far enough will show his close kinship to the apes, monkeys, and tree-shrews and other primates and his distant relationship to the rest of the animals. Evolution of man and the rest of the animate world is the most funda-

mental theory existent in biology today.

Upon such specific questions, however, such as whether man is a mere million or some twenty million years old, whether a primitive anthropoid, called Dryopithecus, was a great, great, ever so great grandfather or merely a distant cousin of the human race, or whether primitive man older than the Indians existed upon the American continent, scientists do differ.

The average person whose only acquaintanceship with gorillas and chimpanzees is through zoo cage bars or the antics of the circus monkeys has a quite understandable repugnance to these animals and is not particularly flattered to learn that they are man's nearest animal relatives. When these anthropoids are studied carefully, psychologists and physiologists find so many similarities between them and man that the conclusion can not help being drawn that tailless apes, including the gorilla and the chimpanzee, are more nearly related to modern man than they are to the tailed monkeys with whom they are usually classed by the ordinary person.

The latest evolution controversy within the ranks of science is between Prof. Henry Fairfield Osborn, president of the American Museum of Natural History and Dr. William King Gregory, of the same institution. Prof. Osborn is author of "Men of the Old Stone Age" and other authoritative books on ancient man and evolution, while Dr. Gregory is one of the leading American anatomists who has devoted himself to the study of man's evolution. Their scientific difference of opinion is marked by close friendly personal relations.

Science must abandon the theory



DR. WILLIAM KING GREGORY, anatomist of the American Museum of Natural History, in New York City, who differs with Prof. Osborn. He believes that man and the apes sprang from the same stocks not earlier than about 7,000,000 years ago.

that man descended from an ancestor who was both ape and man. This is the contention of Prof. Osborn. And he believes that man is immensely older than science has hitherto believed. The prologue of the human drama occurred some 16,000,000 years ago in the period of the earth's history that geologists know as the Upper Oligocene. It was at this time that the Dawn Man sprang from a primitive primate stock, which branching in another direction gave rise to the ancestors of the anthropoid apes, the gorillas and chimpanzees of today. The opening act in human evolution, according to Osborn, occurred on the high plateaus and plains of northern Asia, where the dawn man, great, great grand-

(Just turn the page)

Index to Vol. XI Follows Page 402

INDEX TO THIS ISSUE

Age of Man	397
Agriculture Stabilized	401
Airplane Observation of Eclipse	405
Anniversaries of Science	405
Avogadro	405
Bacteria Founded Steel Trade	402
Bacteria Stimulated by Poison	402
Biology, An Introduction to	405
Bristol-Roach, B. Muriel	402
Carbon Dioxide in Soil Solution	402
Carr, William H.	399
Chemistry, New Conceptions in Colloidal	405
Dougan, L. M.	399
Douglas, Malcolm	400
Dachnowski, A. P.	402
Earth Will Support Eight Billions	401
Eclipse from Air, Will See	405
Fisher, Clyde	399
Floods Checked by Terraces	401
Freundlich, Herbert	405
Fungi, Usefulness of	402
Greaves, J. E.	402
Greaves, William M. H.	405
Gregory, William King	397
Hargreaves, F. J.	405
Hepburn, P. H.	405
Hobbies That Count	399
Humming-Birds	400
Huxley, Thomas Henry	405
Introduction to Biology, An	405
Kinsey, Alfred C.	405
Lieske, Rudolph	402
Lipman, Jacob G.	401
Lodge, Oliver	405
Lutz, Frank E.	399
Malthus Prophecy	401
Man's Age Millions of Years	397
Marconi Granted Patent for Wireless Telegraph	405
Merton, Gerald	405
Mineral Collections	400
Missing Links, Physiological	402
Nature Ramblings	400
Nature Trails	399
Osborn, Henry Fairfield	397
Peat, Versatility of	402
Penck, Albrecht	401
Russell, John	402
Science, The Seven Seals of	405
Science, The War on Modern	405
Science of Today	405
Seven Seals of Science, The	405
Shipley, Maynard	405
Soil Science Congress	401
Steel Trade, Bacteria Founded	402
Stoklasa, Julius	402
Terraces to Check Floods	401
Trails, Nature	399
Tree Easy to Nick-Name	399
War on Modern Science, The	405
Wireless Telegraph, First Patent for	405
Witchell, William M.	405
Woods, A. F.	401
Science News-Letter, June 25, 1927	

Man's Age Extended

(Continued from page 397)

daddy of the present day human races, lived on the ground and used tools skillfully and well. Prof. Osborn reads the apes out of the human family tree, an act that appeals sentimentally to many people. The apes under his theory become remote and distant cousins instead of fairly close relatives.

Dr. Gregory, on the other hand, holds to the older and more generally accepted view that man and the apes had common ancestors as late in the earth's history as 5,000,000 to 7,000,000 years ago. From anatomical studies of brain, teeth and bodily structure of living and fossil men, apes, and other primates, he concludes that the anthropoid apes as a whole are undoubtedly man's nearest known relatives and he lists the primates in order of their relationship to man as: Primitive man, gorilla, chimpanzee, orang, gibbon, Old World monkey, New World monkey, Tarsius, lemur, pentailed tree-shrew. Moreover Dr. Gregory considers that the primitive anthropoid, Dryopithecus, whose fossil remains have been found in the Siwalik hills in India, is a joint ancestor of the apes and man, a sort of missing link between the two stocks.

Man's Age From Teeth

Fortunately teeth, which are more readily preserved through the ages than nearly any other part of the skeleton, give the most information about the ancestry of the individual. Prof. Gregory has found that the distinctive pattern of the ape-man ancestor, Dryopithecus, is preserved in the teeth of the primitive Piltdown man whose jaw was found in England. And reasoning statistically he finds that a period of some 800,000 generations of evolution can be allowed as the interval between the Dryopithecus and the

(Continued on page 403)

News-Letter Features

Born over four years ago of the demand and interest of those individuals who had caught a glimpse of *Science Service's* news reports to newspapers, the SCIENCE NEWS-LETTER has since proved interesting to laymen, scientists, students, teachers and children.

Into the pages of the NEWS-LETTER are fed the cream of *Science Service's* output directed at the newspapers of the world. To this is added material especially prepared.

Turn the pages and note:

It is a *separable magazine*. You can clip or tear out any article without losing or damaging another article on the other side.

Each article is automatically *indexed* by the key word printed above its heading. Articles can thus be filed easily into any system of classification.

Each article is automatically *dated* by its last line.

The current *news of science*, reported for *Science Service* by its own staff and correspondents throughout the world is presented and commented upon in each issue.

Books are *reviewed in brief* as they are received from the publishers.

The *classics of science* and striking passages from current books, addresses and periodicals are carefully selected and published.

Important *anniversaries of science* are appropriately noted week by week in a special department.

Regular articles tell of the happenings in the *skies* and in the great outdoors.

Photographs aid in the telling of the week's science.

Great care is taken to keep its editorial content not only *interesting* but *accurate* as to fact and implication.

The SCIENCE NEWS-LETTER is copyrighted and is sold with the understanding that it is for personal, school, club or library use only. Publication of any portion is strictly prohibited.



SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeograph form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

Subscription rate—\$5.00 a year postpaid. 10 cents a copy. Ten or more copies to same address, 6 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science. Advertising rates furnished on application.

Copyright, 1927, by Science Service, Inc. Reproduction of any portion of the SCIENCE NEWS-LETTER is strictly prohibited since it is distributed for personal, school, club or library use only. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service, details and samples of which will be gladly sent on request.

Staff of Science Service—Director, Edwin E. Slosson; Managing Editor, Watson Davis; Staff Writers, Frank Thone, James Stokley, Emily C. Davis, Marjorie MacDill; Sales and Advertising Manager, Hallie Jenkins.

Board of Trustees of Science Service—Representing the American Association for the Advancement of Science, J. McKeen Cattell, Treasurer, Editor, Science, Garrison, N. Y.; D. T. MacDougal, Director, Desert Laboratory, Tucson, Ariz.; M. I. Pupin, Professor of Electromechanics, Columbia University, New York City. Representing the National Academy of Sciences, John C. Merriam, President, Carnegie Institution of Washington; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; Dr. David White, Chairman of the Division of Geology and Geography, National Research Council; Representing National Research Council, Vernon Kellogg, Vice-President and Chairman of Executive Committee, Permanent Secretary, National Research Council, Washington, D. C.; C. G. Abbot, Director, Astro-Physical Observatory, Smithsonian Institution, Washington, D. C.; Victor C. Vaughan, Professor Emeritus of Hygiene, University of Michigan. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Mark Sullivan, Writer, Washington, D. C.; Marion E. Pew, Editor of Editor and Publisher, New York City; Representing E. W. Scripps Estate, W. E. Ritter, President, University of California; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio; Thomas L. Sidlo, Cleveland, Ohio.

Nature Trails Teach Nature's Lessons

Coordinating Nature Studies

The material on this page is furnished by the Coordinating Council on Nature Activities.

Realizing the need for a national program that would coordinate the nature activities of national groups working with young people, the American Museum of Natural History invited these volunteer organizations to form a council to be known as the Coordinating Council on Nature Activities for the purpose of teaching the growing generation, through nature activities, the value of all wild life and natural resources and their conservation. The organizations represented are: American Museum of Natural History, American Nature Study Society, Boy Scouts of America, Camp Directors' Association, Camp Fire Girls, Inc., Girl Scouts, Inc., Pioneer Youth of America, Playground and Recreation Association, and the Woodcraft League of America.

Science News-Letter, June 25, 1927

Nature Trails

Nature has numerous stories to tell. Many of these stories, however, are lost to the public, out-of-doors, unless some method be devised to call attention to various interesting things that are to be found on every hand. Mere labels upon trees and other plants along the walks and paths are not enough in themselves, although they may succeed in attracting a public that has formerly been somewhat interested in Nature Study. In order to appeal to the growing army of people who seek the open air during the spring and summer months, Nature Trails have been developed in many sections of the country, particularly in the National Parks.

At Bear Mountain, on the Hudson, in the Harriman section of the Palisades Interstate Park, where tens of thousands of people spend their week-ends during the vacation seasons, an experimental Nature Trail is being built. An outdoor nature building is being provided by the Laura Spellman Rockefeller Foundation. At the beginning of this trail is the following label—"How many of us are able to read, unaided, the 'signs' of Nature? Let the guiding labels take the place of a Naturalist Friend who has an interesting story to tell you as you follow the trail." This introductory label really explains the purpose of the project and tells the idea and aim of the series

of "signs" following along the path. Attention is called to the various phases of nature, including the principal geological features of the region, the story of the birds, mammals and amphibia. The botanical trail is being developed under the direction of Dr. Clyde Fisher, of the American Museum of Natural History. Dr. Frank E. Lutz, of the same institution, who developed the Nature Trail idea at his station near Tuxedo, is the scientific adviser of the work. The naturalist in charge is William H. Carr also of the American Museum.

The educational work upon the Bear Mountain Trail includes the teaching of conservation. The following label upon a gray birch reads: "This is one of the trees from which the bark used to be peeled BEFORE people learned that it was the wrong thing to do." An attempt is made, throughout, to have the labels include not only the names, but some interesting facts as well. In order to prevent lengthy wording, a series of two or more labels are sometimes used to explain certain facts.

At the National Parks Conference, which was recently held at Bear Mountain, a resolution was accepted to adopt Nature Trails throughout the United States. There is indeed a great future for this new phase of Nature Education.

William H. Carr,
American Museum of Natural History

Science News-Letter, June 25, 1927

An Easy Tree To Nick-Name

The boy with personal peculiarities is generally well known and generally nick-named. That is, he bears an "eke-name" in addition to the John or Samuel given to him by his parents. So it is with several of our common native trees—the Buckeye, the Redbud, the Shagbark, the Tulip Tree. The same is true of the Kentucky Coffee Tree, which was thus nick-named because some of the early settlers south of the Ohio River used its seeds as a substitute for coffee. The name they gave to it, although generally accepted, is not very apt. The hard seeds are indeed like roasted coffee in color, but the bitter drink made from them has little of the taste of our breakfast beverage. Others who named the tree did somewhat better. They noticed that its twigs never bore any fine spray and that each twig when the leaves had fallen looked like the

stump of a branch with the end cut off. So these observers named it the Stump Tree. They might have called it the Solitary Stump Tree, for it is a rare tree, fond of growing alone. In 1783 the French botanist, Lamarck, who also noticed that the branches had no spray gave it the Greek name, *Gymnocladus* (naked branch), which it still bears in all the tree books.

Now that we know it better we may want to call it by other names. One who hunts for its winter buds may want to call it the No Bud Tree, for until spring is well advanced its buds appear to be scarcely more than little brown spots set in "silky craters." They look strangely unlike any other buds. One who handles the beautiful seal-brown seeds and tries to cut their adamantine coat may want to name the tree that bore them the Brown Ivory Tree. Perhaps some experimenter waiting more than a whole year for these seeds to germinate may find a name to tell how lazy they are. While observing the tree's solitary habits and the peculiar whiteness of its young bark, which breaks into flakes and peels like the skin of a patient who has had fever, one may be tempted to call it the Leprous Tree. When one cuts a twig and observes the beautiful salmon color of its pith, one feels sure that somewhere the Indians must have had a flowing name which meant, "The tree with the salmon pith." Surely a tree so easily named deserves wider acquaintance.

L. M. Dougan,
American Nature Study Society

Science News-Letter, June 25, 1927

Hobbies That Count

To uncover the treasure chests of the notorious Captain Kidd is the ambition of every boy who possesses a pick and a shovel and a place to dig. If you tell your scouts who are qualifying for the mining merit badge that they may find genuine jewels and marketable stones, they may regard you with suspicion. Yet nearly every state in the Union has at least one mineral that has value as a gem or which is so rare in other parts of the country that it is earnestly sought by mineral collectors.

The mineral collection offers more than money values, however. It offers hours of pleasure and profit. Hikes become more interesting and

(Just turn the page)

Nature Trails

(Continued from page 399)

worth while with minerals as an objective. Minerals give a chance to make a collection which would be a real asset to the camp museum, the school, or the community house. Here also is a splendid opportunity to carry out in principle an individual patrol or even troop project. One of the most popular of such projects, as has again and again been demonstrated, is the collection and preparation of a mineral display.

For instance, the display that won the first prize among the collections at the Mohawk Indian Village at the Eastern States Exposition in 1926 was a mineral collection displayed by Troop 19, East Orange, N. J. This was not merely the group of miscellaneous classified minerals and rocks so often seen, but was a display arranged by the scouts to show how common minerals are related to our everyday life. Beside a piece of crude lead ore was a short length of finished lead pipe. Beside a chunk of silver ore glistened a sterling tea-spoon and a few silver coins. Contrasted to the specimen of copper ore lay a coil of copper wire. Mercury made possible the thermometer; mineral talc, a can of talcum powder, etc.

Among the features of a recent annual banquet of Troop 8 of Elizabeth, N. J., was an exhibition of projects made by the eight different patrols. The display adjudged the best was the work of the "mineral patrol." These scouts made a model of a mining camp, complete in every detail showing various mining methods and equipment. Accompanying the model were labeled mineral speci-

mens such as would be produced in the layout they had displayed.

Mineral collectors have a broad field in which to exercise their ingenuity. Practical and educational exhibits may be prepared to show the interesting and mystifying properties of minerals. One type that always attracts attention and tells a story is a collection classified as "Minerals of Interest." Such a collection shows, for example, how iceland spar reveals two long lines on a sheet of paper when held over a single line, due to its double refracting powers (on the same principle that a stick appears bent when dipped in water). It would show how lodestone violently attracts a compass needle and picks up iron fragments. Of course, the "Virginia Lucky Stone," the mineral which crystallizes in the form of crosses, often perfect St. George's and St. Andrew's, would be included. Mercury, the only liquid metal, which has such a high specific gravity that an iron bar will float in it, is always of interest.

Still other types of collections are those which show the variation in color or weight, or form, or hardness of minerals. Then too, the scout will find he can prepare collections that are based even more closely on the merit badge requirements for mining. These include samples of different ores, types of rock formations, groups of the rock-making minerals and many others.

Malcolm Douglas,
Boy Scouts of America.

Science News-Letter, June 25, 1927

One-fourth of all the bird population of South America is in Ecuador.

English air traffic rules require airplanes to give the right of way to airships and balloons.

The Crow Indians are among the tallest of people, the men averaging almost six feet in height.

A new device to suck rock dust out of mines makes the air more healthy for miners to breathe.

The 110 story skyscraper planned for New York City will have 60 elevators, none of which will make the entire 110 floor trip.

Automobiles have helped to kill off wild game animals, not by running the animals down, but by carrying hunters more quickly and easily to inaccessible places.

BIOLOGY**NATURE RAMBLINGS**

By FRANK THONE

**Humming-Birds**

Humming-birds have been called flying jewels, living bits of flame, and similar fanciful and poetic names by such a variety of naturalists and literary folk that it is vain to seek a new descriptive term for them. Everybody knows them, and exclaims joyously when these little birds descend to pay them a visit.

The best way to secure regular visits from humming-birds is to plant a trumpet creeper vine somewhere about the premises. The deep-throated, flame-colored flowers of this tropical plant are the favorite food-counters of these hovering, humming, darting small bits of feathery energy. But they can be lured by other deep or long-spurred flowers that common bees have trouble getting into, for example, the common annual larkspur.

The common feeling that there is something exotic about humming-birds, that they do not exactly fit in with the rest of our birds, is quite correct. The whole family is essentially tropic, and those that visit us during the summer come late and leave early on their flight to warmer lands at the summer's end. In the tropics there are thousands of them to one in the temperate zones, and our few non-tropic species are quite eclipsed by dozens and scores of humming-birds that never leave their warm home-lands.

Some of the tropical humming-birds replace insects in the familiar role of carrying pollen from flower to flower, thus insuring fertilization and a crop of seed. The yellow dust catches on the feathers of their heads, and the next flower they visit receives a bit of it on its stigma. Many of these flowers have given up all dependence on insects as pollination agents, and rely entirely on their special humming-birds guests.

Science News-Letter, June 25, 1927

PFLUEGER
FISHING TACKLE

EVERY
Fisherman
Should
Have
It

Free Upon Request

Write and get a copy of Pflueger's Pocket Catalog No. 146. It contains just the kind of information every fisherman wants. Besides being a catalog of Pflueger tackle for every kind of fishing—also illustrates and describes leading game fish, habits—haunts—weights—food value—tackle recommended for catching, etc.

THE ENTERPRISE MFG. CO.
Dept. SNL, Akron, Ohio
Oldest and Largest Manufacturer of Fishing Tackle
in the United States

PFLUEGERS'
FISHING TACKLE
Leaders Since 1864

Say you saw it advertised in the SCIENCE NEWS-LETTER

Earth Will Support Eight Billion People

On this page, Dr. Frank Thone gives a few of the high-lights of the First International Congress of Soil Science, which met at Washington, June 13 to 22.

Eight thousand million souls. That is the size of the population the world can sustain, if all of its lands are utilized to the full. So said Dr. Albrecht Penck, noted geographer of the University of Berlin, at the meeting of the First International Congress of Soil Science.

Dr. Penck has surveyed the peoples of the earth and considered the present and potential food-supplying power of the fields they till and yet may win from forest and desert. And he refuses to bow to the ghost of Malthus at any mere two and one-half billions, which is the limit allowed for world population by many of his colleagues.

If this latter estimate is true, he says, our politico-economic problem is indeed acute, for we shall reach the two-and-a-half billion mark within a century. A hundred years ago, when Malthus first expressed his fears of world misery through over-population, and proposed birth restriction to avert it, there were nine hundred million people in the world. The centennial of his gloomy prediction, 1920, saw the world population doubled, with at the same time a marked advance in the standards of living of many races.

The failure of Malthus' prophecy to be realized, Dr. Penck pointed out, has been due partly to the winning of new lands through the clearing of forest areas in the temperate zones, and partly to improved methods of cultivation applied to older lands. If comparable advances can be made in the yet untapped but immense resources of the tropics, the one and three-quarters billions of people now on this planet have only begun to fulfil the ancient injunction to multiply, and replenish the earth, and subdue it. To the objection that the white man can not become acclimated to the moist tropics, Dr. Penck opposes the reply that he has not yet made a really serious, scientific effort to do so, and that if he will descend gradually from his higher, cooler border lands he may yet be able to conquer the jungle and make it into a country he can live in.

But even if the tropics can not be made permanently habitable for the white race, there are other peoples who can fill them if they are properly guided. Dr. Penck pointed out

the example of the natives of Java, who under the benevolent despotism of the Dutch rule have increased until now the fifty thousand square miles of the island support a population of thirty-five millions, or nearly seven hundred persons to the square mile. The Javanese have only an Oriental standard of living, it is true; yet the condition of their swarming millions now is better than that of the sparse scores of thousands of their ancestors before the science of the white man showed them how to improve their lot. As a comparison, we may vision the state of Iowa, which is somewhat larger than Java, supporting a quarter of the population of the United States, instead of its present two and one-half millions.

Brazil is to be the great nation of the future, if our grandchildren can make good the dream of Dr. Penck. It depends on whether the lowlands of the Amazon can be settled, he said. The conquest of the tropics, he emphasized in concluding, depends on a close and careful study of all factors affecting human life in them, and especially on an accurate knowledge of their widely various soils.

Science Has Stabilized Agriculture

Science has changed agriculture from an occupation that in past ages has had to choose between moving on to new and unexhausted fields, and staying at home to starve. This was the keynote of the presidential address of Dr. Jacob G. Lipman. Ancient Rome, he stated, knowing nothing of modern methods of preserving permanent fertility of the soil, literally ate up the fields of Italy, and then ate up Sicily, Sardinia and the lands of the coast of Africa. The medieval world did no better. The Germanic migrations that upset the whole world were due largely to crop failures following uneconomic primitive agriculture. Our own Indians moved frequently, apparently for the same reason. But modern science has shown the way to keep farm lands permanently productive. None the less, he added, we have still to learn to think of soil problems in world terms.

"As students of soils and soil resources we must think not only of plant-food but of its mobilization," he told his hearers. "We must consider the soil solution not alone in its local relations, but as a part of a great mass of fresh water moving

to the sea. We must consider the cubic miles of sediment deposited at the outlets of great rivers as a toll upon the land and as a tax upon those who till it. We must think, finally, of ancient plants and animals, as well as of those now living, as possessors of something that in the workshop of creation must be used over and over again. We are the technical advisors to the nations who are trustees of precious raw materials. These must be used wisely and conserved effectively in order that human kind may travel with the least pain and sorrow on its road of destiny."

Terraces to Check Floods

Flood relief figured in the discussions of the Congress. Not merely stronger and higher levees to keep the Mississippi within bounds, not forests and reservoirs in the headwaters region, should be the only reliances of river control engineers, declared Dr. A. F. Woods, director of scientific work of the U. S. Department of Agriculture. The way the hills are farmed nowadays permits spring rains and melting snows to run straight off their steep sides and into the valleys, swelling the creeks and small rivers and piling the water up at last into disastrous floods. Terraces, he said, are imperative in hillside farming, if repetitions of this spring's tragic events are to be averted.

"Failure to build terraces on sloping fields generally and to plant grass and trees on the steeper lands highly susceptible to rainwash accounts for much of the excess of water now sweeping down the Mississippi," he said. "Practically nothing is being done about this phase of flood prevention. There are no hillside terraces north of the Arkansas River. Eighteen inches of topsoil has been removed from the youthful fields in some parts of northeastern Kansas. The entire topsoil is gone from hundreds of thousands of acres in western Virginia, western Pennsylvania, eastern Kentucky and southeastern Ohio. Not only will terraces and other soil-binding measures slow up the runoff water, but they will save the most valuable part of the soil, and will reduce the clogging of streams, which cuts down their carrying capacity and adds to the flood danger."

(Just turn the page)

Soil Science Congress

(Continued from page 401)

CO_2 in Soil Solution

The breath of bacteria, the carbon dioxide discarded by them as a by-product of their life-processes, comes to man's table as his daily bread. We live on the exhalations of billions of tiny beings which we never see. This, in brief paraphrase, was the revolutionary doctrine laid before the Congress in a paper prepared by Dr. Julius Stoklasa, of the Technical Institute and Experiment Station of Prague.

The old theory that plants build their food out of carbon dioxide which they capture from the air by means of their leaves, Dr. Stoklasa said, is entirely inadequate. The supplies of this gas in the air, according to his measurements, are not sufficient to account for the sugars, starches and other substances formed by plants with the assistance of the sun's energy. But the soil solution contains a great deal of carbon in the form of bicarbonates, and this carbon is taken into the plant along with the other soil minerals used by the plant, and borne by the sap to the green parts where carbohydrate manufacture is going on.

Of course not nearly all of the carbon dioxide given off by soil bacteria gets into the plants. A great deal of it escapes upwards, into the air. But here the leaves are waiting for it, and it passes into the plants through the channels hitherto taught as orthodox according to the accepted doctrines of plant physiology.

Furthermore, according to Prof. Stoklasa, fertilizers added to the soil are by no means entirely for the direct benefit of the corn or clover or other crops. A large share of these plant condiments fall to the share of the bacteria, stimulating them to greater activity in the production of materials eventually used in the production of foods by the higher plants.

The Usefulness of Fungi

Mushrooms, moulds and other fungi, neglected plants usually regarded as nearly useless or even dangerous, have their place in the complex underground processes that eventually make our farms and forests.

Sir John Russell, director of the great British agricultural experiment station at Rothamstead, told how fungi are being used on horseless farms to make fertilizer out of the otherwise wasted straw. The new

"manureless manure" is made simply by adding to straw water and certain chemicals, especially phosphates, ammonia and lime, and letting the fungal spores that float in the air do the rest.

The importance of fungi to trees was stressed by a number of speakers at a special session on the problems of forest soils. Many of our most important timber trees, including pines, spruces, larches and oaks, live in a sort of mutually parasitic union with mushrooms and other kinds of fungi. These fungi receive nourishment from the trees and in turn supply other kinds of food material to the roots. Such fungi are known as "micorrhiza," which means "fungous roots." Micorrhiza thrive best, it was stated, in soils rich in raw humus, while trees in older soils have less of them. They seem to be jealous of their root-inhabiting privileges, for they keep away from their hosts the growths of harmful and wholly parasitic fungi, that would otherwise infest them.

The Versatility of Peat

Peat, or "turf" as old Irish people call it, is a material whose agricultural and industrial value is not properly appreciated in America, according to Dr. A. P. Dachnowski of the U. S. Department of Agriculture. Dr. Dachnowski showed samples of German-made cloth, woven largely from peat fibers, and sheets of thick, corky material used for heat insulation. He also had with him a vertical section cut from a peat bog, in which there are roots, leaves and the remains of insects and other forms of animal life, dating back ten thousand years or more, yet all perfectly preserved. At one level he pointed out plants that grew when Tut-anh-amon reigned, at another, leaves that were green when Christ was born.

Physiological "Missing Links"

Creatures that seem to be a sort of missing link between the world of independently-living green plants that can build their own food out of inorganic material, and the world of dependent plants, including the fungi and bacteria, that must have ready-made organic food to live on, have been studied by Dr. B. Muriel Bristol-Roach of Rothamstead. These between-world soil dwellers belong to the plant group known to botanists as algae, familiar examples of which are the green pond-scums that swarm in stagnant water. Most of these are as completely free-living

as corn or cabbage. In the soil-inhabiting group, however, there are some species that can grow in this normal fashion at the surface, but below ground, where the light is cut off, they apparently are able to take hold of dead organic material and feed on it as fungi do, thus hastening its return to the dust from whence it came.

Poison Stimulates Bacteria

Small amounts of chemical substances in the soil, many of them poisonous to bacteria, seem to have a stimulating effect on these microscopic organisms as well as on the bigger plants whose lives they affect, according to Dr. J. E. Greaves, of the Utah Agricultural Experiment Station. In his studies on the rise and decline of soil bacterial populations he has found this stimulating effect followed the use of arsenic, of sodium sulphate and of sodium chloride, all of which are poisonous to bacteria in stronger concentrations.

The explanation which Dr. Greaves offers for this phenomenon is that the effect of the poison is not a direct one. He inclines to the opinion that there is in the soil, along with the bacteria, a destructive substance or principle allied to the bacteriophage, prominent in recent medical research, and that the poisons cause increases or decreases in its activity, thereby causing the fluctuations in the numbers of bacteria.

Bacteria Founded Steel Trade

The vast iron mines of Minnesota, of Alsace, of Silesia, and the roaring furnaces of Pittsburgh, of Sheffield, of Essen, all owe their existence to the activities of humble bacteria that swarmed in unimaginable billions in the swamps and pools of long past ages. This vision was conjured up by the paper of Dr. Rudolph Lieske of the great German agricultural and forestry experiment station near Berlin.

According to Dr. Lieske, iron is an essential of life to the bacteria that cover the surfaces of wayside pools with rusty films. "Have you had your iron today?" is neither a jest nor an advertisement to these humble creatures. They get the life energy that keeps them going by changing one kind of iron rust into another. And the slow accumulation of their iron-loaded bodies, piling up through multitudinous leisurely millennia, filled the hollow places of the earth with what we now call iron ore.

SCIENCE NEWS-LETTER

The Weekly Summary of Current Science

Volume XI

Numbers 299 to 324

January to June 1927



Published by

SCIENCE SERVICE

The Institution for the Popularization of Science

21st and B Sts.,

WASHINGTON, D. C.

(Note—These six center pages of this issue comprise title page and index of Volume XI, which is completed with this issue. These pages should be pulled out and placed at the beginning of Volume XI when bound.)

Abbot, C. G.	361
Abel, John J.	231,309
Abstracts of Theses	393
Ackerson, Luten	369
Adams, Bob	315
Adams, C. C.	329
Adams, Jesse E.	103
Africa, Fight Tsetse Fly in	179
Africa, South	11
Agassiz Medal Award for 1927	293
Age of Man	397
Agriculture, Diminishing Returns	169
Agriculture Stabilized	401
Airplane Observation of Eclipse	405
Air Service, U. S.	115
Airmen, Weather Bureau Aids	103
Aitken, Robert Grant	145
Albert, Henry	319
Alcohol, The Chemist and	37
Alcohol and Rats	133
Alcoholic Deaths Increase	251
Alexander, Jerome	77
Alfalfa Seed, Heating	161
Allen, Edgar	15
Allen, Frederic M.	259,338
Allen, Harry	303
Allen, W. E.	71
Alphabet, Origin of	317
Aluminum and Rubber Paints	240
Amateurs, Scientific	49
Ambitions Not Sure Guide	59
America, Ancient Man in	207
American Annual of Photography	29
American Association for Advancement of Science	1,2,21,31
American Association of Variable Star Observers	57
American Books of 1925, Importtant	89
American Boys Taller	7
American Chemical Society	257
American Forestry Association Meeting	83
American Geophysical Union, Transactions of the	377
American Indians and Their Music	61
American Labor and American Democracy	89
American Medical Association	133
American Methanol	249
American Philosophical Society Address	295
American Philosophical Society Meeting	275
American Physical Society Meeting	223
Antundsen, Roald	297
Anatomy of Science	61
Andrade, E. N. da C.	393
Anemia, Liver Extract for	309,337
Animals in Forestry	329
Animals' Mistakes Affect Evolution	117
Ant People, The	377
Anthropology, An Introduction to	377
Anti-Evolution	69,95,123,141,241,389
Antiseptics, Discoverer of	229
Apes, or Something Else?	295
Apes to Talk With Fingers?	197
Apperly, F. A.	135
Applied X-rays	105
Arctic, The Iceless	185
Arctic Exploratory Flight	375
Are You Intelligent?	393
Area of Skin Measured	177
Arequipa, Peru	11
Arkansas, Diamonds in	125
Arkansas Defeats Anti-Evolution	123
Arkansas Evolution Bill	123,263
Armor, Ultra-sleeves of	199
Arnold, Julean	225
Asene, G.	101
Arson a Profession	39
Art, Indian	67,137
Art Treasures Unearthed	195
Artifex, or the Future of Craftsmanship	377
Ashbrook, Frank G.	36
Ashman, Richard	169,283,379,395
Asparagus, Male, Best	105
Aster Leafhopper	327
Astronomy, Modern	217
Astronomy, Revision of Young's Manual of	185
Astronomy, the Fundamentals of	361
Athletes, Science Helps Train Winning	365
Atom, Architect of the	211
Atom, Romance of the	233
Atom, What is the	393
Austin, Mary	311
Austin, William E.	240
Australia Joined to Hawaii	103
Automobiles and Lung Cancer	338
Autos, Better	65
Avogadro	405
Ayer, Edward E., Ornithological Library	185
Aztec New Year Celebrated	325
Babies, Study Emotional Responses of	359
Babies, Better, Modern	320
Babies Face Hazards	307
Babylon, Home Brew in Backyard Exploration	235,361
Bacon, Francis	47
Bacteria, Drugs Poison	79
Bacteria Carry Own Enemies	137
Bacteria Founded Steel Trade	402
Bacteria Stimulated by Poison	402
Bacteriophage	137,337
Bailey, Vernon	111
Baker, S. Josephine	320
Baker, R. A.	257
Baker, T. Thorne	393
Baldness Baffles Science	167
Barger, George	103
Barnes, D. F.	79
Barnes, Will	84
Barro Colorado Island, The Flora of	393
Barrows, Alice	121
Basket Makers, Relics of	20,145
Bates, C. G.	41
Bauer, Louis A.	279
BCG	53
Beams, J. W.	7,274
Beavers Again	231
Bee Eugenics	165
Beebe, William	261
Beef Liver for Anemia	337
Beer, Brewing, in Babylon	235
Bees Choosy About Colors	5
Bees Killed by Sprays	313
Bell, Alexander Graham	139
Benedict, Francis G.	272
Bennett, Arthur G.	267
Bentley, Madison	127
Benzene	299
Bergey, D. H.	1
Bergius, Friedrich	4
Bermuda Biological Station	165
Berry, A. J.	313
Berry, Pauline G.	61
Berthelot, Marcellin P. E.	171
Bertholf, Lloyd M.	5
Bevan, Arthur Dean	319
Biologist's Pastoral	105
Biology	4
Biology, An Introduction to	405
Biology Needs Mathematics	7
Bird Migration	139,161,215,269
Bird Sounds at Night	303
Bird Travel Time	303
Birds, Origin of	169
Birds, Our American Game	393
Birds and Woodlots	281
Birds of Central New York Marshes	121,297
Birds and Woodlots	121
Birkhoff, George D.	17,33
Birth Control	23
Blanchard, Phyllis	11
Blasdale, Walter Charles	201
Blathwayt Comet	71
Blight, N. M.	77
Blood Speed Same	331
Bloom, William	307
Blossoming, Premature	199
"Blues" Collected by Camera	21
Blumgart, Hermann L.	331
Boas, Franz	353
Body versus Mind	370
Bogen, Emil	259
Bogert, L. Jean	169,313
Bonds, Index Price	161
Bones, Broken	320
Bones for Fertilizers	77
Bonner, C. A.	371
Books of 1925, Important American	89
Borax Deposit, Record	229
Boring, Yield Steam Power	283
Bose, Jagadis Chunder	23
Bouillon Treatment	370
Boulenger, E. G.	377
Bound North	303
Bower, F. O.	361
Bowman, Isaiah	77
Boyle, Robert	63
Bradford, Gershon	377
Bragg, William	345
Brain Hurt Changes Mind	7
Brazil, Vital	349
Breasted, James Henry	159
Brewster, E. T.	345
Bridges, K. M. Bangham	331
Bridgman, P. W.	393
Briggs, L. Vernon	369
Bronze Age in Siberia	51
Brooks, C. E. P.	45,185
Brown, Bancroft H.	15
Brown, Barnum	31
Brown, E. W.	75
Brown, H. P.	217
Brown, Howard E.	219
Brown, M. Ralph	233
Brownian Movement	61
Buckley, J. S.	71
Buckner, G. Davis	240
Bug's-Eye View	279
Bunker, H. A.	370
Burgess, G. K.	273
Burnett, Francis Lowell	320
Burns, Geoffrey C. H.	288
Butter and Sugar, Lime Used in	240
Buwalda, John P.	211
Byrd, Richard E.	375
Cactus, Story of	127
Cady, H. P.	27
Caldwell, George T.	337
Caldwell, Janet A.	337
Calendar, Persian	155
Calmette, Albert	53
Calmette TB Treatment Tried	71
Calves	36
Camp Fire, Tree Year in	304
Cancer, Heredity Controls	259
Cancer, Immune Mice Get	61
Cancer, Lead Compound for	338
Cancer and Twins	259
Capital Punishment	135
Carbon Dioxide in Soil Solution	402
Careers, Likes Linked With	101
Cargoes and Harvests	137
Carr, William H.	399
Cartersville, Georgia	137
Casein	201
Cathcart, Edward P.	181
Cathode Rays Speed Drying	239
Cattell, Ware	47
Cave, Herbert	169
Cave Man Treasured Fossil	31
Caven, R. M.	169
Cazenavette, L. L.	329
Cecil, Russell L.	115
Celestial Object, Mysterious	311
Cellular Physiology	377
Center of North America	47
Chamberlin, T. C.	23
Chambers, Robert	111
Chang-heng Chen	167
Chemical Patents	393
Chemical Calculations	377
Chemical Engineering Economics	169
Chemical for Boilers	33
Chemical Laboratory Manual	313
Chemical Theory of Life	257
Chemistries, Old	393
Chemistry, Digest of Elementary	377
Chemistry, First Principles of	313
Chemistry, Fundamentals of	169
Chemistry, New Conceptions in Colloidal	405
Chemistry, Survey of American	169
Chemistry, The Romance of	313
Chemistry, Three Centuries of	281
Chemistry Applied to Home and Community	61
Chemistry Experiment Sheets, Applied	105
Cheney, R. H.	393
Chickens, Study Four-Legged	121
Chidester, F. E.	121
Child, Margaret S.	197
Child, The Bright	249
Child Brightest, Youngest	371
Child Development, Directory of Research in	281
Childhood, Freeing, from Disease	189
China, Explorer Enters	107
China, What and Why in	393
China Checks Plague	191
Chinese Art Languishing	225
Chinese Death Rate High	167
Cholera in Japan	169
Chromium	65
Chromosomes, Interpreter of	293
City Conditions Man's Greatest Enemies	149
City Trees Have Hard Life	225
Civilization and Casualties	329
Clapp, Earl H.	45
Clark, Austin	333
Clark, E. L.	171
Clark, George L.	105
Clark, Guy W.	260
Clark, Norman	75
Climate Through the Ages	45
Cline, Isaac M.	89
Clinics, Hospitals and Health Centers	105
Clothes Moth	41
Coad, B. R.	203,331,375
Coal Age Fossils	201
Coal Age Relics	183
Coal Conference	265
Coast Guard Watch for Icebergs	175
Coblenz, W. W.	27,99
Cockroach	41
Code, World Figure	129
Co-Eds Best Physically	181
Coffee	393
Colman, Victor	101
Cohn, E. J.	309,337
Cold Light Measured	99
Colds, Most Time Loss from	195
College, Experimental	191
Colloid and Capillary Chemistry	13
Colloid Chemistry	77
Colloidal Chemistry, New Conceptions in	405
Colors, Bees Choosy About	5
Colton, Henry E.	69,96
Comets	71,91,161,191,223,351,367,391
Conductimeter	81
Conklin, E. G.	165
Conner, L. A.	319
Conquest of Disease	233
Conservation, Forest	83
Conversation Analyzed	195
Convulsions Point to Epilepsy	369
Cook, Harold J.	207
Cook, O. F.	183
Cook, Robert	311
Coolidge, President	73
Copeland, William R.	83
Copper and Manganese Needed	239
Corinth, Unearth Art Treasures at	195
Corn Borer, War on	131
Corn Borer Control	73
Corn Borer's Appetite	41
Cornell Medical School	111
Corpuscle, Revolution of the	137
Correspondence Schools	45
Cosmetics, Medical Attack on	337
Cotton Boll Weevil	41
Cotton Gin	15
Cotton Spinning, Intermediate	393
Cough Cause Sought	320
Counterfeit Plants	101
Courts, The Story of Our	377
Cowles, H. C.	325
Cox, Catherine Morris	121
Coyote	27
Crab, To a Horse-Shoe	187
Creation	345
Creative Knowledge	345
Crime, Background of	369
Crime Situation Reviewed	39
Crimers Compared by Students	149
Crist, John W.	29
Crocker, E. C.	257
Crooks, E. B.	229
Crumbine, S. J.	307
Crystals Regulate Radio	29
Cucumber Resistant to Mosaic Disease Discovered	149
Culbert, William Leditie	391
Cumming, Hugh S.	107
Cummings, Byron	215
Cumston, C. G.	169
Cures, Tuberculosis	53
Curie, Mme.	79
Curriculum, Student Viewpoint on	103
Cushing, Sumner W.	89
Cyclones, Tropical	89
Dachnowski, A. P.	402
Dahlia, Idylls of the	393
Dana, James Dwight	219
Dance Energy Measured	163
Dandelions, Early	167
Darlington, Anne Charlotte	377
Davis, Effa V.	320
Davis, Emma	89
Davis, Michael M.	105
Dawn Men	295
Day, Arthur L.	283
Dayton, Neil A.	270
Deaf, Feeling Speech Aids	235
Death Penalty	135
Death Whisper	17,272
Dekkowitz, Rudolf	119,190
de Kruif, Paul	111
DeLesseps	63
Dellingier, J. H.	279
Democracy, Whither	217
Demoor, J.	196
Demuth, G. S.	313
Densmore, Frances	61,287
Dentition of Dryopithecus	29
Descartes, Rene	91
des Noettes, Lefebvre	101
Devil's Lake	47
d'Herrelle	137,337
Diabetes, Myrtillin for	259,338
Diabetes Communicable	1
Diamonds, American	125
Dice, L. R.	159
Dickinson, H. C.	65
Diet Cures Skin Diseases	320
Dieterle, R. R.	370
Dinsmore, Ernest L.	377
Diphenyl Oxide	33
Diplo-dodociopus, The	379
Disease, Fungi as Causes of	101
Disease-Bearing Insects	199
Disease Fought After Death	307
Disease from Raw Fish	51
Disease Germs Variable	73
Dishes, Danger in Unwashed	101
Distemper and Influenza	199
Ditmars, Raymond L.	349
Dixon, R. L.	369
Doberneiner, Johann Wolfgang	187
Doctorates Conferred	281
Doctors, U. S. Has Most	319
Dodo's Dolorous Doom	169
Dogs Vaccinated	72
Dogwood, Flowering	256
Doll Family Traced to Stone Age "Adam"	93
Dolls Were Once Gods	11
Donohoe, George	370
Dootson, F. W.	313
Doppler, Christian	171
Dorsey, George A.	377
Dougan, L. M.	399
Douglass, A. E.	31
Douglas, Malcolm	400
Dow, H. H.	33

Downland Man	201	Figgins, J. D.	207	Gilmore, Charles W.	81,181	Hobson, R. L.	167
Dragon-Flies	343	Finck, J. L.	81	Giza	127	Hoffman, Carlos C.	165
Draper, W. F.	395	Finnemore, Horace	361	Gloag, John	377	Holden, Edward S.	169
Dresses and Blouses, Fitting	361	Fire, Ancient Uses of	183	Glozel Alphabet Discoveries	317	Holland, Maurice	185
Dropsey, Treatment of	260	Fireston, Fred	320	Glozel Discovery Baffles Savants	141	Hollingsworth, Harry L.	99
Drug Plant, New	260	Fish, Disease from Raw	51	Glaeck, Bernard	369	Holmes, S. J.	361
Drugs Poison Bacteria	79	Fish, Sun Bad for	73	Glaeck, Sheldon	40	Home Brew in Babylon	235
Drunkenness Test	259	Fish Tapeworm in U. S.	371	Glumtrap Rhyme	363	Homes as Weather Bureaus	63
Dryopithecus	63	Fishbein, Morris	361	Goddard, Henry Herbert	377	Honey, Poisonous	263
Dugan, R. S.	185	Fisher, Clyde	399	Gods, Dolls Were Once	11	Hookworm	47
Dunne, J. W.	393	Fisher, Willard J.	341	Gods, Oldest, Were Goddesses	215	Hoover, Herbert	17
Dust Cloud Envelopes Earth?	307	Fisheries, Floating Factories	197	Gold or Index Price	161	Hormone, Heart	195
Dutton, L. O.	137	Fishes, Death from Live	95	Golf Greens, Bugproof	133	Hormone, Synthetic	103
Dynamo, The, and the Steam Engine	361	Fishes Eat More when Warm	181	Goodman, Robert B.	84	Hormone a Gland Substitute	15
Dykstra, T. P.	95	Fishing Industries, Need of	185	Gorilla Young Like Human	13	Horse-bristles	183
Dyspepsia, Salt for	135	Scientific Research in	185	Government Workers, Psychological Tests Pick	205	Horse Collars, No Roman	101,245
Earth, Dust Cloud Envelopes	307	Fitting Dresses and Blouses	361	Governors and Bankers Find	205	Hoskins, J. Hobart	73
Earth, Flat, and Anti-Evolution	95	Fliers Fly, Why	115	Science Absorbing Hobby	49	Hospital Ideas, New	371
Earth Never Molten	23	Floods Checked by Terraces	401	Grains Increase Yield	121	Hospitals Try Indian Medicine	
Earth Will Support Eight Billions	401	Flood, No Quakes from	321	Grand Canyon Yields Fossils	271	Music	287
Earth Systole and Diastole	75	Flood Began Last September	285	Grass Conservation	84	Hough, Walter	11,93,183
Earthquake	79,91,183,211	Flood Control Tests Urged	297	Grasshoppers Menace	165	Houghton, Douglas	103
Earthworm, The	347	Flood Due to Sinking	389	Gravity Value, New	273	House Plants	89
Earthworms, Singing	123,251,385	Flood Prevention, Trees Aid	321	Gray, Frank	237	How I Came to Be	313
Easton, Helen S.	193	Flood Refugees, Indian Mounds	as	Gray, Harold	240	Howard, L. O.	69,195,199
Eberlin, L. W.	309	Flood Relief Work Like War	367	Greaves, J. E.	7	Howarth, Fred	207
Eberson, Frederick	187	Flood Sand Injures Land	375	Greaves, William M. H.	405	Howe, H. E.	37
Eclipses	9,341,351,381	Flood Victims, Planes Aid	331	Greco-Roman Antiquity, History of Sciences in	249	Howes, Paul G.	361
Eclipse Confirms Einstein	219	Flora of Barro Colorado Island	393	Greece Influenced by Mountains	99	Hrdlicka, Ales	5,43
Eclipse from Air, Will See	405	Flower, Our National	335	Greenwood, Thelma J.	383	Hubble, Edwin	109,179
Eddington, A. S.	117,137,153	Flowers, Sex Extract of	167	"Greens" Sprout Best in Chill	203	Huber, L. I.	41
Edison, Thomas A.	91,293	Flowers, Winter	103	Gregg, Willis R.	103	Hughes, C. W.	99
Edison-Ford Rubber Vine	183	Flowers Retell Fairy Tales	255	Gregory, William K.	29,63,295	Hull, Callie	281
Education, Integrity in	121	Flu Epidemic Waning?	107	Grid-glow Relay, Knowles	225	Hull, Clark L.	149
Education by Mail	281	Flinking Caused by Speech	249	Grier, N. M.	267	Humming-Birds	400
Education for Adults and Other Essays	61	Ills	29	Grigg-Skjellerup Comet	223	Humphreys, W. J.	29,143,321
Educational Test, An	363	Fogs and Clouds	29	Groundhog	75	Hunt, L. B.	393
Edwards, Junius D.	240	Follies, The New Medical	361	Gudger, E. W.	95	Huntington, Ellsworth	89
Ehrenfeld, Frederick	79	Food Affects Meat Quality	240	Guide to Thinking	233	Hurricane Warnings, Static	69
Einstein, Albert	17,61	Food for Feathered Friends	303	Gustavson, R. G.	31	Hutchison, Paul	393
Einstein in Everyday Life	77	Footprints, Fossil	81	Gypsy Moth	79	Huxley, J. S.	329,345
Ekelund, Herman	163	Footprints, more Fossil	181	Forestry	301	Huxley, Thomas Henry	405
Electric Current, Measure Minute	141	Forest Research	45	Hydrogen Ion Concentration	169	Hybrid Trees Make Farming of	
Electric Lamps "Sick"	227	Forestry, Importance of Animals in	329	Hydrogen Not Changed	283	Forestry	
Electric Lights Aid Study of Bird Migration	215	Forestry, New Hybrid Trees Make Farming of	301	Hydrographic Office, U. S.	69	Hydrostatic System of Trees	29
Electrically-Made Rubber Castings	309	Forestry Association Meeting	83-	Hygieia, or Disease and Evolution		Hygiene	
Electricity, Light Produces	27	Fossil, First	31	Haberlandt, Ludwig	195	Ice Ages, Man in America in	207
Electricity and Frogs' Legs	201	Fossil Footprints, More	181	Hadley, Philip	73	Icebergs, Coast Guard Watch	
Electricity Fathers Worms	47	Fossil Remains Discovered in Nebraska	296	Hadrian Wall Mystery	223	for	175
Elements of Physics	77	Fossils, Grand Canyon Yields	271	Haebler, H.	149	Identification of Body with X-rays	391
Ellery, Edward	313	Foster, William	313	Haeglund, Erik	267	Imhotep, Tomb of	343
Ellis, N. R.	240	Fox, L. W.	311	Haggard, Howard W.	393	Immigration Quota Law Speeds Invention	313
Ellsworth, Lincoln	297	Fox, Silver	35	Hair Bobbing, Prehistoric	145	Immunity	53
Elmer, O. H.	149	Frank, E.	231	Hale, George Eliery	359	to Disease Lasts After Death	307
Eminent Chemists of Our Time	313	Frank, Glenn	191	Hale, William J.	169	Indian Art	67
Emotion, Too Much	369	Frankenfield, H. C.	285	Hall, George W.	338	Indian Civilization	19
Emotions, Health and	338	Franklin, Benjamin	15,49,347	Hall-Quest, Alfred L.	105	Indian Civilization Unearthed	58
Engine, Steam	15	Franklin, Sir John	139	Halley's Comet	299	Indian Medicine Man's Music	287
Engineering and Invention	25	Freeman, John R.	297	Halliburton, W. D.	201	Indian Mounds Used as Flood Refuges	285
Entomonomad	70	Freeman, Walter F.	338	Hankin, Hanbury	29	Indian Mysterious Art	137
Environment Shown Great Cause of Insanity	369	Freud, Birth of Dr. Sigmund	283	Hankins, Frank H.	29	Indian Remains of Penobscot Valley	201
Fenzyme, First Crystallized	260	Freud, Light on	369	Hansen, Peter Andreas	187	Indian Village Discovered	215
Eotvos, Baron von	59	Freundlich, Herbert	13,405	Hanson, Frank B.	133	Indians' Religious Torture	87
Epidemic Record, To Publish	159	Frison, Theodore H.	281	Hardwick, Rose S.	7	Indians Celebrate Solstice	389
Epilepsy, Forestalling	369	Frogs and Spider Webs	383	Hargreaves, F. J.	405	Industrial Conditions of Cities	149
Equilibria in Saturated Salt Solutions	201	Frost, Edwin Brant	321	Harington, C. R.	103	Industrial Psychology	45
Ergosterol Source of Vitamin D	231	Fryer, Douglas	59	Harper, Roland M.	241	Infantry, Song for	99
Esperanto Tested in Schools	193	Fundamentals of Astronomy	361	Harrison, J. R.	29	Influence of Nurture Upon Native Differences	299
Essays in Popular Science	329	Fundamentals of Chemistry	169	Harrow, Benjamin	211,233,265,313	Influenza, Distemper and	199
Etowah Mounds	137	Fungi as Causes of Disease	101	Hart, Hastings H.	39	Influenza Record, Publish	159
Eugenics and Race	233	Furs Dyed to Suit Fashions	240	Hartness, James H.	49	Inge, W. R.	165
Euphorbia	11	Fungi, Usefulness of	402	Harvard Observatory in South Africa	11,155	Inoculation Experiments with Cowpox	299
Europe, Twentieth Century	361	Gabbert, Mont R.	377	Harvard Tests: High School Chemistry	393	Insanity Problem	40
Everest Expedition, Mount	79	Gale, H. G.	77	Harvey, R. B.	27	Insanity, Environment as Cause of	369
Evolution, Mistakes Affect	117	Gale, Walter F.	391	Hassinger, H.	281	Insect Carries Plant Disease	327
Evolution, Osborn and Gregory on	295, 397	Galileo	15	Hasty, Frederick E.	320	Insect Mutts and Jeffs	181
Evolution, Purposive: Link Between Science and Religion	153	Games and Sports in British Schools and Universities	217	Hathaway, Edward S.	181	Insect Sense of Smell	333
Evolution, Purposive	395	Garber, R. J.	121	Hawaii, Australia Joined to	103	Insect Types	281
Evolutionists, Fundamentalists Are	325	Gardner, Henry A.	139	Hay, O. P.	207	Insects, Disease-Bearing	199
Ewers, Hans Heinz	377	Gas and Gases	169	Hays, Arthur Garfield	70	Insects Aid Australians	195
Exam System Needs Revision	181	Gas Attacks Hasten Ripening	27	Headlights on Surgical Instruments	149	Insects Infest Skies	203
Exploration, Backyard	361	Gases, Molecular Spectra in	377	Healy, William	369	Insulator, New	253
Explorations, Early	283	Gasoline	65	Heart Disease, Tonsils and Hearts, Revives "Dead"	195	Insulin Action Duplicated	231
Eye for an Eye?	135	Geology, Great God	183	Heberlein, C. E. J.	91	Insulin Crystallizer	309
Fable, A.	61	Gault, Robert H.	235	Heck, N. H.	183,321,357	Integrity in Education	121
Fairchild, Fred R.	39	Gee, Haldane	365	Hedges, F. A. Mitchell	21	Intelligence of Policemen	211
Fallaize, E. N.	21,81	Gelatin and Dishes	101	Hedin, Sven	107	Intelligent, Are You	393
Family, 87-Child, A Myth	311	General Biology: Life and Evolution	361	Heilmann, Gerhard	169	Internal Constitution of Stars	137
Family Likenesses	75	General Electric Co.	141,177	Heinroth, Hans	129	International Language	129
Farm Population of U. S.	105	General Science Review	25	Heir of all the Ages	297	Intestine, The Imperious	235
Farmers Embattled Again	315	Genius, Some Revaluations	249	Heldt, Thomas J.	371	Introduction to Biology, An	405
Farr, Clifford B.	370	Genius, Undiscovered	299	Helium Shortage Exists	119	Invisible, Seeing The	257
Fats, Food Affects Quality of	240	Genuses Husky	17,121,325	Hellman, Milo	29,63	Iridium Hardest Metal	185
Faust, Ernest C.	51	Geography, Modern Business	89	Henderson, L. F.	257	Iroquois Indians	58
Feeble-Minded, Missing the	357	Geography of Heaven	91	Henri, Victor	258	Ives, Herbert E.	237, 241, 275
Feeble-Minded Children Wasted	370	Geology and Geography	25	Hens, Marble-Fed	240	Jade Held Precious	167
Felt, E. P.	203	Geraniocorelei	203	Hebron, James M.	39		
Fenton, F. A.	41	Germans Reinstanted	258	Hephbrun, P. H.	405		
Fermat, Pierre de	31	Germs, Variable Disease	73	Heredity Controls Cancer	259		
Ferns, The	361	Germs in Swimming Pools	320	Hermann, Karl L.	66		
Fertilizers, Bones for	77	Gerry, Eloise	201	Herschel, William	31,49,155,235		
Fertilizers, Sources, Manufacture, Uses	169	Gerry, Henry L.	393	Hertzprung, Ejnar	311		
Fewkes, J. Walter	67	Gerty, F. J.	338	Hess, Alfred F.	63,231		
		Gibson, Manly B.	129	Heyl, Paul R.	61,173,273		
		Gifted Children a Problem	29	Hobbies That Count	399		
		Gill, Tom	321	Hobby	49		

Jaggar, T. A.	119, 217	Logic of Modern Physics, The	393
January Evening Skies	9	Long, J. S.	239
Japan, Progress of Science of Nutrition in	153	Longer Life	27
Japanese Earthquake Not Unexpected	183	Longer Life For Rats	258
Java Fossil Is Freak	5	Longhorn, Protection for Texas	151
Jazz of the Spheres	117	Loomis, A. L.	17, 57, 272
Jeans, J. H.	179, 353	Lorentz, H. A.	281
Jenkins, Anna E.	347	Losh, Hazel M.	31
Jenkins, C. Francis	69	Lotus Seeds Better, Old	375
Jenner Inoculation Experiments	299	Lucas, F. F.	257
Jochelson, Waldemar	51	Lucio	89
Joffe, Abram	253	Luening, F. W.	83
Johnson, E. H.	153	Lunar Eclipse	351
Johnson, H. M.	177	Lute, Anna M.	161
Johnson, Treat B.	54	Lutz, Frank E.	399
Jones, E. Elizabeth	61	Lynx, Canada	87
Jones, Neville	89	Lyon, Leverett S.	13
Joyce, T. Athol	21	MacCormick, Austin H.	229
Judd, Neil M.	271	MacCurdy, George Grant	31
June Skies	351	Macdonald, George	223
Jupiter	15	MacDougal, D. T.	23, 29
Jupiter, "Northern Lights" on	274	Mace, C. A.	377
Kadel, Benjamin C.	33	Machinery Tested In Padded Cell	315
Kaiser, A. D.	319	Macht, David I.	239, 338
Kaiser William II's Society	31	Macleod, J. J. R.	393
Kansas, Early Days in	219	MacPherson, Hector	217
Kearton, Richard	185	MacQuarrie, T. W.	133
Keble, Frederick	345	Madagascar Rubber Vine	183
Keith, Norman M.	260	Magellan, Ferdinand	251
Keller, Elsie	155, 221	Mail, Education by	281
Kelley, Truman L.	299	Makers of Science: Electricity and Magnetism	249
Kellogg, Remington	47	Making a Living	12
Kellogg, Vernon	69	Malinowski, Bronislaw	313
Kendall, W. C.	377	Mallock, A.	185
Kepel, Frederick Paul	61, 281	Malthus Fever	337
Kessel, M. H.	185	Malthus Prophecy	401
Keyser, Cassius J.	345, 363	Man, Prehistoric, in East Africa	81
Khayyam, Omar	155	Man, The Nature of	377
Kider, Alfred	20, 145, 285	Man and Beast	77
Kilauea Growing Uneasy	119	Man in America	43, 207, 296
King, A. J.	257	Man's Age Millions of Years	397
King, Edward S.	29, 307	Man's Greatest Enemies	149
Kinsey, Alfred C.	405	Manson, Grace E.	169
Klein, Paul	309	Mantle Dated by Pollen	195
Khugh, A. Brooker	159	Manual of Cultivated Plants and Shrubs	137
Knowles, D. D.	225	Map, First Printed	281
Knowlton, Frank Hall	393	Marble-Fed Hens	240
Kotowski, 203		March's Thesaurus Dictionary	265
Krause, Allen K.	54	Marconi Granted Patent for Wireless Telegraph	405
Krause, K.	263	Marconi's Telegraph	299
Kroeger, A. L.	201	Marden, J. W.	267
Krueger, Hugo	31	Marston, Leslie R.	281
Kunde, M. M.	338	Marston, H. E.	131
Kunkel, L. O.	327	Marvels of Modern Mechanics	249
Kunz, George F.	265	Marvin, Charles F.	297
Laird, Donald	155, 171, 221	Mashburn, Neely C.	115
Lake, G. C.	337	Massingham, H. J.	201
Lambert, Walter D.	75	Masson, Irvine	281
Lamp Filament Disease	227	Matelirinck, Maurice	217
Lamson, Armenouhie T.	313	Maternal Irradiation	63
Landis, Carney	195	Mathematics, Biology Needs	7
Langford, George	58	Mathes, R. C.	237
Langmuir, Irving	211	Matter, The Death of	353
Laplace, Death of	283	Matter and Gravity in Newton's Physical Philosophy	153
Lark, Meadow	375	Maughan, R. L.	395
Lashley, K. S.	73	May Evening Skies	291
LaWall, Charles H.	233	Maya Calendar, Origin of	131
Law, Frederick M.	391	Maya Culture, Beginnings of	21
Law of Chemical Patents	393	Mayer, Joseph	39
Lawes, Lewis E.	135	McAdie, Alexander	63
Lawrence, Ernest O.	7, 274	McAdoo, William	39
Lead arsenate	133	Mcatee, W. L.	121, 281
Leakey, L. S.	81	McCormack, John W.	281
Leaves Cure Own Wounds	13	McCracken, Anna	233
Legal Psychology	233	McDougall, William	331
Length of Day	43	McHargue, J. S.	239
Lennes, N. J.	217	McIndoo, N. E.	313, 334
Lenz	311	McIntyre, Howard D.	370
Leo Succeeds Orion as Southern Constellation	209	McKay, M. B.	95
Leonardo da Vinci, Death of	251	McKeechnie, N. K.	297
"Leonardo of Springfield"	50	McLester, James S.	338
Leopard Changes Spots	240	Meadow Lark	375
Letters to Editor	120	Measles	59, 119
Lewis, Gilbert Newton	61	Mechanical Skill, Tests	133
Lewis, Paul A.	54	Medical Advances	259
Lieske, Rudolph	402	Medical Association, American, Meeting	319
Lien-teh, Wu	105	Medical Dictionary, Gould's	377
Life, Chemical Theory of	257	Medical Follies, The New	361
Life, Stream of	345	Medical Science for Everyday Use	297
Life and Evolution	361	Medical Science Freeing Childhood from Disease	189
Life Extension Valuable	223	Medicine	25
Life Stuff, Describe Basic	111	Medicine, History of	169
Light, Life Affected by Polarized	239	Medicine Men's Music in Modern Hospitals	287
Light, Measure Heatless	99	Meinzer, O. E.	13
Light, Our Dependence On	45	Meisel, Max	169
Light, Three-Inch Pieces of	7	Meller, Ida M.	261
Light, Time Keeper on	253	Men Suicides, More	207
Light Produces Electricity	27	Mendel	29
Light Sources, Artificial	361	Mendel, Martin	105, 377
Lillie, Frank R.	37	Mendeleeff	47
Line Used in Butter	240	Mental Cases, Nurses Study	371
Liners, Forty-knot	197	Mentality of Twins Tested	81
Lipman, Jacob G.	401	Menu, American	137
Liquor Restriction Scored	319	Merriam, Charles E.	249
Lister, Birth of Lord	203	Merrill, Elmer D.	217
Lister, Honor Memory of	229	Merrill, Maud A.	211
Literacy and Illiteracy	241	Merton, Gerald	405
Live Wires in Silk	257	Mesa Verde Ruins	19
Liver Extract for Anemia	309	Metal, Iridium Hardest	185
Locusts, Seventeen-Year	391	Metal Statues From Plaster	315
Lodge, Oliver	227, 345, 405	Metals	239
Noddack, Walter and Ida	163	Metcalf, Joel H.	57
Noffsinger, John S.	45	Meteorology, Manual of	169
Noguchi, Hideyo	72, 335	Methanol	37, 249
Noise Test, 12-Day	155, 171, 221	Meyers, Charles S.	45
Norlin, George	121, 345	Miami Hurricane	33
Norsemen, Clues To	263	Mice Get Cancer	61
Noyes, A. A.	2, 21	Michaels, Leonor	169
Nuthatch	119	Michelson, Albert Abraham	253
Notkin, J.	370	Microammeter, New	141, 177
Nutrition in Japan, Progress of	153	Midsummer Festivals	389
Nutrition Work with Children	233	Migration of Birds	215, 233
Nuttall, Zelia	131, 325	Miles, Charlotte K.	70
Oberon	31	Miles, W. R.	259
Odors, Artist in	127	Milk Relationship	131
Ohga, Ichiro	375	Miller, E.	377
Oil Burner, Domestic	201	Miller, Gerrit	5
Oils, The Essential	361	Millikan, R. A.	77
Opal Weighs Pound	43	Minchin, G. M.	363
Operations, Microscopic	7	Mind of a Gorilla	61
Optical Scientific Instruments	137	Mind Works, Tells How	197
Optical Convention, Proceedings of	137	Minerals Enter Politics	233
Orchid Sanitarium	275	Minnesota refuses anti-evolution bill	193
Origin of Man	29	Minot, George R.	309, 337
Ornithological Library, Catalogue of	185	Mirrors of the Year	249
O'Rourke, L. J.	115, 205	Missing Links, Physiological	402
Osborn, Henry Fairfield	295, 296, 397	Mississippi Flood Began Last September	285
Osterhout, W. J. V.	377	Mitchell, Samuel A., 9, 361, 381, 385	89, 233
Ostwald, Wilhelm	258	Mitscherling, W. O.	257
Ostwald, Wolfgang	45	Modern Business Geography	89, 233
Overholser, Earle Long	77	Mole Philosophy	345
Overman, O. R.	240	Molecular Spectra in Gases	377
Overton, Grant	249	Mongolia, Holger	53
Oxford Meeting	169	Monaco, Prince of	47
Paints, Rubber and Aluminum	240	"Monkey War" Collapses	241
Paints Dried by Cathode Rays	239	Moon Lacks Common Rock	271
Panama Canal	63	Moon Occults Saturn	51
Pancoast, Henry S.	55	Moon's Effect on Weather	143
Parasitized Society	165	Moore, Thomas V.	39
Parents and Personalities	11	Moorehead, Warren K.	137
Parents Lend Immunity	119	Mouse, Disappearance of	87
Parents Poor Judges	171	Morgan, A. E.	29
Paresis, Malaria Cures	338	Morgan, John J. B.	227
Paresis Patients, Starving	370	Morgan, Raymond	123
Park, William N.	59, 71, 337	Morgan, T. H.	293
Parker, G. H.	99	Moret, A.	141, 317
Pasque Flower	215	Morrill, A. W.	37
Pasteur, Oeuvres de	185	Mortensen, E.	195
Pasteur, Peacock	251	Mosquitoes	359
Pasteur Institute	111	Mounds Used as Flood Refuges	285
Paterson, C. C.	227	Mt. Wilson Observatory	109
Pathfinder Star Maps	29	Mountain Lion	87
Patton, F. Lester	169	Mouse Plague Abating	111
Pay for Prisoners	151	Munroe, Charles Edward	371
Pearl, Raymond	5, 23, 297	Murphy, William P.	309, 337
Pearl Buttons Threatened	267	Mushrooms	327
Peat Used in Sweden	163	Music, Medicine Men's	287
Peat, Versatility of	402	Music, Primitive	21
Peattie, Donald Culross	137	Music from Radio Squeals	123
Pechstein, L. A.	71	Musicians, Study of Health of	325
Fecos, New Mexico	19	Musicrats	36
Peirce, G. J.	377	Myrtillin for Diabetes	259, 338
Penzk, Albrecht	401	Mythology, Radioactivity and	105
Penguins, Bronchitis Cured	261	Napier, Death of John	203
Percival, John	329	National Academy of Sciences	271, 293
Persimmons, Mellow	77	National Child Health Day	307
Personalities, Parents and	11	National Research Council, Publications of	185
Personality, Human (Bibliography)	169	National Tuberculosis Association	54
Pharmacy, Four Thousand Years of	233	Natural History, Bibliog.	169
Philippine Flowering Plants	217	Natural History of Our Conduct	137
Phillips, T. E. R.	49	Naturalist at the Zoo	377
Phillips, W. N.	65	Naturalist's Pilgrimage	185
Phillips, Wendell C.	319	Nature Trails	399
Philosophers and Their Times	277	Neblette, C. B.	361
Photoelectric Halftone Cuts	275	Nebraska Fossil Discoveries	296
Photoelectric Promptness	273	Nebula, Spiral	109
Photography, Its Principles and Practice	361	Nebulae Stages in Evolution	179
Photosynthesis	233	Nelison, Thomas	41
Physics, Problems of Modern	281	Nephritis Produced	338
Physics in Its Relations	361	Nerves and Noise	221
Physiology, Textbook of Comparative	393	New Natural History	13
Physiology and Biochemistry in Modern Medicine	393	New Year Ceremony Revived	325
Pickard, G. W.	55, 279	New York Marshes, Birds of Central	297
Pickle Industry Saved Again	149	New York State, Trees of	217
Piesse, Septimus	339	Newton, Isaac	79, 171, 219
Pines Saved	345	Newton, Honor Memory of Sir Isaac	173
Pink, M. Alderton	169	Newton's Physical Philosophy, Matter and Gravity in	153
Pioneer Youth of America	303	Nicholson, Seth B.	31
Pistols Plentiful	39	Nihlén, John	253
Pithecanthropus	5	Noble, Edmund	77, 153
Pivoting, Auto	66	Noble, G. Kingsley	384
Plague, Check Spread of	191	Noddack, Walter and Ida	163
Plague, Mouse	111	Noguchi, Hideyo	72, 335
Planck, Birth of Max	235	Noise Test, 12-Day	155, 171, 221
Planetaryesimal Theory	23	Notkin, J.	370
Plant, Missing Links	73	Norsemen, Clues To	263
Plants, Counterfeit	101	Notlin, George	121, 345
Plants, House	89	Notre Dame, Honor Memory of Sir Isaac	173
Plants, Life of	345	Nottingham, John	227
Plants, Same Disease Attacks Two	95	Nottingham, John	227
Plants, The Physiology of	377	Nottingham, John	227
Plants and Animals Need Manganese and Copper	239	Nottingham, John	227
Plants and Vitamins	75	Nottingham, John	227
Plants as Energy Converters	315	Nottingham, John	227

Plants of the Past	393	Ritter, William E.	117, 137, 197	Smith, Groves B.	329	Templin, Olin	233
Platoon School, The	121	Robbins, Wilfred W.	77	Smith, Julian F.	299	Tennessee Anti-Evolution Law	69
Player Piano Rolls	75	Roberts, Lydia J.	233	Smith, Theobald	111	Tennessee Evolution Act Passed	187
Pleiades	307	Rockwood, Albert W.	260	Smith, Walter B.	201, 263	Terman, Lewis M.	21, 249
Plum, Johannes	66	Roebeling Collection	43, 129	Smithson, James	395	Territe, Soviet, The	217
Plums, Wild	247	Roeser, J.	41	Smithsonian Institution, Annual Report	29	Terraces to Check Floods	401
Pneumonia	115, 337	Rogers, Charles Gardner	393	Snakes Dangers Manifold	139	Tests Mechanical Skill	133
Pneumonic Plague, Treatise on	105	Rogers, James F.	325	Snails	263	Texas Longhorn Protected	151
Poinsettia	11	Rollier, A.	53	Snake Fear Not Inborn	341	Thallium, Announce Discovery of	203
Poisons in Blood	370	Roman Horse Collars	101	Snakes, Deadly	349	Thayer, William Snyder	338
Polar Sea, First Crossing of	297	Roman Wall Mystery	223	Snow, A. J.	153, 265	Thermodynamics	77, 393
Polarized Light Affects Life	239	Roo, Joseph H.	313	Soap Bubbles Studied	157	Thesis, How to Write	121
Policemen, Intelligence of	211	Rose, J. N.	127	Soddy, Frederick	105	Thom, Burton Peter	329
Politics, New Aspects of	249	Rosenheim, O.	231	Soil Microbiology, Principles of	361	Thomas, Edward	393
Politics Cause Prison Chaos	229	Rosenow, E. C.	338	Soil Science Congress	401	Thomas, Lester	304
Pollen Dates Relic	195	Roses, Brown Canker Disease of	347	Solar Eclipse	351	Thompson, Warren S.	149
Pons-Winnecke Comet	161, 367	Round, Eda M.	201	Solar Study	359	Thomson, Albert	296
Poole, Francis H.	115	Rowan, William	215	Solid Tires Blow Out	311	Thomson, J. Arthur	13, 217
Pope, Philip H.	105, 251	Rower, William H.	59	Sommerfeld, Arnold	137	Thomson, William	395
Population, Chinese	167	Rubber and Aluminum Paints	240	Song for Infantry	99	Thornley, Thomas	393
Porcelain Art Languishing	225	Rubber Castings Electrically-Made	309	Sound Waves, Inaudible	272	Three Lectures on Atomic Physics	137
Porcupine	135	Rubber Vine	183	Southern Telescope, Largest	155	Thurstone, L. L.	149, 371
Porter, R. H.	149	Ruedemann, Rudolph	123	Spahlinger, Henry	133	Thyroxin	103
Porter, Russell W.	50	Russell, H. N.	95, 185	Spectroscopic, Symbiontism and Origin of	89	Tick Fever	111
Porter, W. L.	187	Russell, John	402	Spectrohelioscope, Study Sun with	359	Tietz, Felix	311
Postal Aids, Science Helps Pick	205	Saber-Tooth Tiger	275	Spectroscopist, Stellar	321	Tiger Find, Saber-Tooth	275
Potatoes, Plenteous	27	Saiki, Tadasu	153	Speech, Feeling, Aids Deaf	235	Tiger Trails in Southern Asia	185
Pottery, Ancient, from Trujillo	201	Salt for Dyspepsia	135	Speech Ills Cause Flunking	249	Time, An Experiment with	393
Power, Frederick Belding	127	Sand, Flood, Injures Land	375	Spencer, Kellogg	320	Time from the Stars	385
Practical Colloid Chemistry	45	Sanoeyrin	53	Spiders, Jazz of the	117	Time Loss Most from Colds	195
Pratt, George D.	83	Saturn, Moon Occults	51	Spider Webs	383	Titania	31
Prehistoric Hair Bobbing	145	Saunders, Aretas A.	121, 297	Spoehr, H. A.	233, 315	To Begin with	297
Prenatal Life Favors Girls	5	Savage, Howard J.	217	Sponge, Sad Fate of Youthful	121	Tomb Robbers	127
Preston, Robert L.	393	Scarth, Geo. W.	7	Spring Begins This Month	147	Tonsils and Heart Disease	319
Prickly Pear, Insects Fight	195	Schepmann, W.	181	Spring, Giant	13	Toothaches, Experimental	129
Priestley, F. G.	207	Schlesinger, Frank	11	Spruce	59	Tornadoes, Most Do Little Damage	261
Priestley, Joseph	49, 79	Schools, Esperanto in	193	Squirrels' Memory Tests	159	Totem Poles Rescued	357
Primitive Psychology, The Father In	313	Schramm, Gustav L.	377	Standley, Paul C.	13, 101, 393	Towards the Open	233
Principles of Plant Growth	77	Schreiner, E. J.	302	Stanford University	211	Trachoma Germ Found	339
Principles of Soil Microbiology	361	Schultz, Adolph H.	13	Star, Size of	343	Tracy, Henry Chester	233
Prison Chaos Due to Politics	229	Schwachheim, Carl	207	Star, Structure of a	353	Trade Journals, Schools Need	7
Prisoners, Pay for	151	Science, On Translating	289	Star Measurer	145	Trails, Nature	399
Procrustes or Future of English Education	169	Science, Pioneers of	345	Starlite, Blue Gem	265	Transactions of the American Geophysical Union	377
Proctor, F. I.	339	Science, Why Popularize	329	Stars, Display of Winter	85	Translating Science	289
Properties of Inorganic Substances	105	Science Service Annual Meeting	297	Stars, Internal Constitution of	153	Transmutation of Hydrogen into Helium Denied	283
Protoplasm Described	111	Sciences, The	169	Stars, Time from the	385	The Efficiencies Measured	41
Psychiatric Association, Meeting of American	369	Science, The Seven Seals of	405	Stars and Atoms	117	Tree Easy to Nick Name	399
Psychologists, The Ways of	331	Science, The War on Modern	405	Static, Radio	69	Tree Swallow	295
Psychology, Outline of Comparative	185	Science of Today	405	Statues of Ancient Deities	215	Trees, City, Have Hard Life	225
Psychology In Personal Selling	265	Scopes Case Decision	69	Statute	7	Trees Aid Flood Prevention	301
Psychoneurosis	329	Scorpions Born Alive	151	Stealing Learned at Home	39	Trees and Shrubs of Mexico	13
Psychotherapy	283	Scott, R. F.	91	Steam Power, Borings Yield	283	Trees of New York State	217
Public School Publishing Co.	121	Scott, R. J. E.	377	Stearns' Comet	191	Trevor, J. E.	393
Pueblo	19	Seoville, Samuel, Jr.	77	Steel Trade, Bacteria Founded	402	Triobite, Love Song of a	267
Pueblo Bonito	271	Sea, Study of	71	Stefansson, Vilhjalmur	375	Tropical Cyclones	89
Pupin, Michael I.	1	Sea-Horses	311	Steffenson, J. F.	153	Trout, Food for	341
Purposive Evolution	77, 153	Sea Terms, A Glossary of	377	Stellar Madhouse, The	153	Truesdell, Leon E.	105
Quakes	91, 321, 357	Seal Herd Increasing	99	Stellar Spectroscopist	321	Tsetse Fly, Fight	179
Quantum Theory	7, 77	Sears, Paul B.	77	Stern, Berhard J.	297	Tuberculosis, Science Strives to Conquer	53
Quantum's Plight, The	153	Seashore, Carl E.	21, 55	Streptococci	137	Tuberculosis	71, 133, 187
Quayle, Philip F.	157	Sedimentation, Pre-Devonian	329	Strock, M. S.	279	Tung Oil in Florida	139
Rabies	71, 72	Seeds, Old Lotus, Grow Better	375	Strong, Edward K., Jr.	101	Tunnicliff, Ruth	189
Raccoons	36	Segerblom, Wilhelm	105	Student Viewpoint Studied	103	Turner, Albert M.	84
Racial Basis of Civilization	29, 233	Self-Conscious Love	379	Sturdevant, G. F.	181	Turner, D. M.	249
Radcliffe, Lewis	197	Sellheim, Hugo	5	Suez Canal	63	Turner, H. H.	45
Radio	26, 29	Semmens, Elizabeth	239	Sugar from Wood	267	Turpentine Trees, Conserves	201
Radio Accuracy, Greater	279	Senner, Arthur H.	201	Suicides	127, 191, 207	"Turret Telescope"	50
Radio and Sunspots	55, 279	Sergardi, Fabie	65	Sullivan, Henry S.	369	Twentieth Century Europe	361
Radio Death-Force	17	Seri, S.	207	Summers, Montague	345	Twins, Cancer and	259
Radio Direction Changes	247	Serums for Snake Bites	349	Summer, James G.	260	Twins, Test 158 Pairs of	81
Radio Predictions for Atlantic Storms	275	Settlement, Science of	77	Sun Enters Aries and Spring Begins	147	Two Souls in One Body	377
Radio Squeals, Music from	123	Seven Seals of Science, The	405	Sun Laziest Now	43	Tyler, Chanin	169
Radio Static	69	Seventeen-Year Locusts	391	Sun Speaks to Earth	1	Typhoid, Watch for	395
Radio Talks with Movies	313	Seventy-Five-Mile Gun Mile Out	59	Sunsots and Radio	55, 279	Types of Mind and Body	377
Radio Tube, Largest	215	Sex Extract of Flowers	167	Sunsots on Increase	31	Typist, Effect of Noise on	155, 221
Radioactivity and Mythology	105	Sex Hormone	31	Super-Sound Waves	57		
Rajchman, Dr. Ludwik	159	Sex Sways Thinking?	21	Surgery in Tuberculosis	54		
Ramsay, H. H.	357	Sexes War Before Birth	265	Surgical Headlights	149		
Razor, C. M.	229	Shanahan, William T.	369	Sutermester, Edwin	201		
Rasorite, Discovery of	229	Shapley, Harlow	11, 91, 155	Swallow, Tree	295		
Rats, Destroy Memory in	73	Shaw, Sir Napier	169	Swann, W. F. G.	274		
Rats, Longer Life for	258	Shear, C. L.	101	Swimming Pools, Germs in	320		
Rats Good Swimmers	331	Shear, T. Leslie	195	Swynnerton, C. F. M.	179		
Reagan, Albert B.	87, 389	Sheppard, S. E.	309	Sibylla, or the Revival of Prophecy	377		
Redden, William R.	367	Sherman, Elizabeth	63				
Rehder, Alfred	137	Sherman, H. C.	258				
Reich, Herbert J.	247	Sherman, Mandel	359				
Reid, William	91	Shimmy, Auto	66				
Relay, New, Most Sensitive	225	Shipley, Maynard	405				
Relief Work Like War	367	Siberia, No Bronze Age in	51				
Religious Torture, Indians'	87	Sigma Xi Fellowships	313				
Renaud, E. T., Jr.	215	Silk, Live Wires in	257				
Renner, G. T., Jr.	91	Sinskin, Pine	119				
Research in Tuberculosis	54	Skin Area of Body Measured	177				
Review of 1926	3	Skin Diseases, Diet Cures	320				
Reymond, Arnold	249	Skin Test for T. B.	187				
Rhenium in Pure Form	163	Skjellerup Comet	223				
Rhinoceros, New	347	Skook, A. L.	370				
Rhodesia, Stone Age in	89	Skunk	151				
Rhyme, Glumtrap	363	Sleepers, Restless	177				
Rice, Thurman B.	233	Sleeping Sickness	338				
Rich, M. N.	267	Slosson, Edwin E.	289, 353				
Richards, Polk	339	Slosson, Preston William	361				
Rickets	63	Slye, Maude	259				
Riddle, Oscar	5, 265	Smells, Classifies	257				
Ripening of Fruits	27	Smelts, The	377				
Rist, Edouard	54	Smith, Edgar Fahs	393				
		Smith, Edward H.	175				
		Smith, Erwin Frink	87				
		Smith, Frank R.	151				

Volta, Alexander	139	Webb, Hanor A.	7	Wiant, J. Stewart	345	Wood R. W.	17, 57, 272
von Post, Lennart	195	Weber, C. O.	77	Wildcat	87	Wood Wastes,	83
Voorsanger, W. C.	320	Weber, Max	293	Wiley, G. O.	341	Woods, A. F.	401
Wagner, Richard R.	260	Webster, T. A.	231	Wilkins, Harold T.	249	Wooley, C. Leonard	171, 247
Waksman, Selman A.	361	Weigand, G. E.	177	Wilkins' Hop Great Adventure	375	World Map, First Printed	281
Walcott, Charles D.	329	Weight Lost in Breath	272	Williams, Horatio B.	7	Worms Noisy but Don't Sing	385
Wallin, Ivan E.	89	Weinstock, Mildred	63	Willoughby, Raymond R.	75	Wray, Robert I.	240
Walling, William English	89	Weiss, Freeman	203	Willstaetter, R.	258	Wren Cipher Solved	15
Wallis, W. D.	377	Wells, Walter A.	117	Wind Record Set	33	Wright, F. E.	271, 293
Walton, W. R.	165, 385	West, Clarence J.	281	Windaus, A.	231	Wu, Lien-Teh	191
War on Modern Science, The	405	West, Olin	319	Winslow, Carlile P.	83	Wylie, Chas. C.	385
Ward, H. B.	371	Wetmore, Alexander	161, 233, 269	Winter Flowers	103	Wylie, R. B.	13
Ward, Robert D.	313	Whales, Evolution of	47	Winter Neighbors, Two	119	X rays	61, 65, 181, 338, 391
Warden, C. J.	185	What and Why in China	393	Winter Stars, Display of	85	Yaqui Indians, Religion of	87
Warren, Shields	297	Wheat, Find Ancient	329	Wireless Messages, First	187	Yelenka the Wise and Other	
Warthin, Alfred S.	259	Wheat, Improved, Increases		Wireless Telegraph, First Pat-		Folk Tales in Dramatic Form	377
Washington's Death a Warning	117	Yield	121	ent for	405	Yellows Disease of Aster	327
Watkins, W. Warner	337	Wheeler, William Morton	181	Wisconsin, Univ. of, Experi-		Yerkes, Robert M.	61, 197, 273
Watson, Lloyd R.	185	Wherry, Edgar T.	335	mental College	191	Z Blood Factor	260
Watson, R.	57	Whipple, Guy M.	75	Witchcraft, Geography of	345	Zimmer, John Todd	185
Watt, James	15	White, David E.	271, 389	Witchell, William M.	405	Zondek, Bernhard	167
Ways of Living	217	White, Paul B.	319	Withrow, J. R.	240	Zuckerman, H. G.	27
Weather, Does the Moon Affect	143	White, William Charles	54	Witmer, Lightner	177		
Weather Bureau Aids Airmen	103	Whitman, Walt	303	Women and Work	181		
Weather Bureaus, Homes As.	61	Whitney, Eli	15	Wonders of Science	89		
		Wholey, Cornelius C.	329	Wood, Ben D.	181		

How to Use Key Words

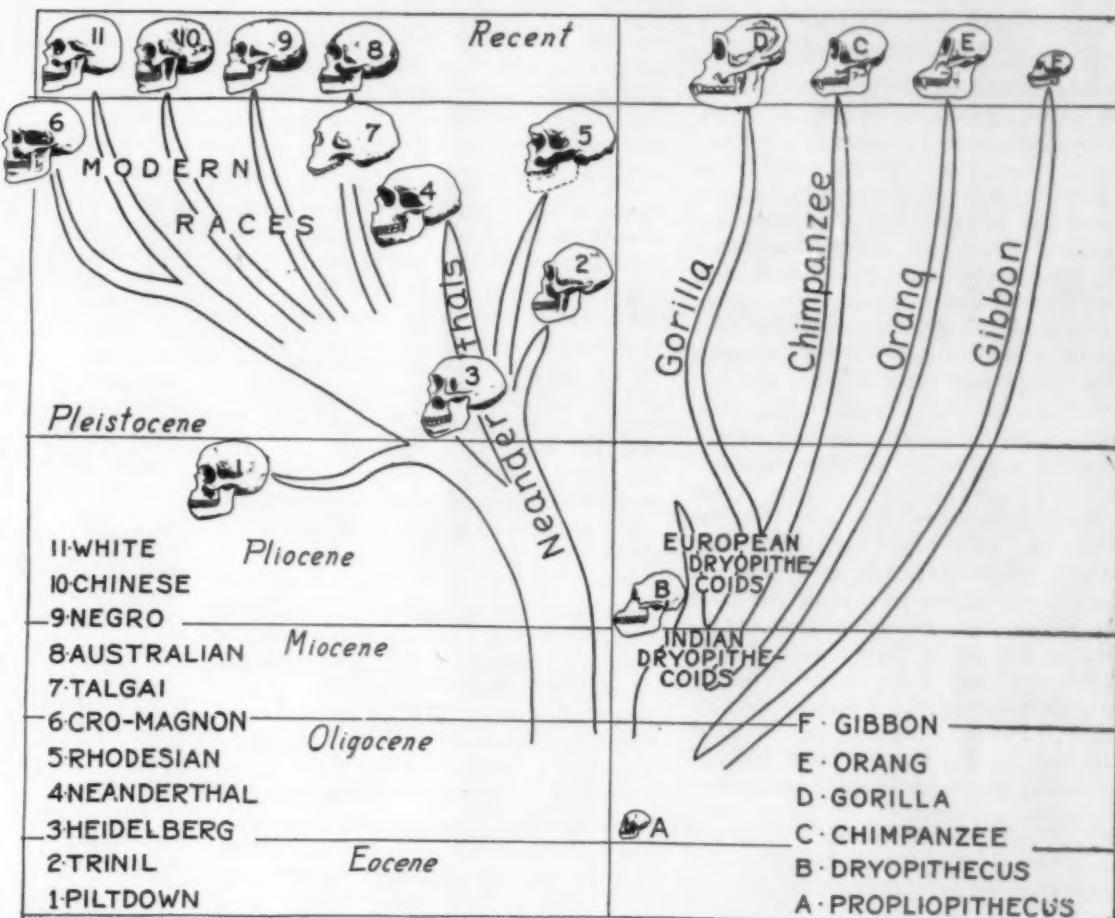
In order to aid in catching the items that concern you and to facilitate clipping and filing, a key word in small capitals has been printed on the right of the line above each article. The key words used fit into any system of classification, whether it be a straight alphabetical file, a system of your own devising, the Library of Congress classification or the Dewey system.

Library of Congress Classification

A	General Works. Polygraphy.
B	Philosophy.
BF	Psychology.
G	Geography, voyages, travel.
GA	Mathematical and astronomical geography.
GB	Physical geography.
GC	Oceanology and oceanography.
GF	Anthropogeography.
GN	Anthropology. Somatology. Ethnology. Ethnography. Prehistoric archaeology.
GR	Folklore.
GT	Manners and customs.
GV	Sports and amusements. Games.
HC	Economic history and conditions. National production.
HD	Economic history. Agriculture and Industries.
HE	Transportation and communication.
HF	Commerce.
HM	Sociology. General.
HQ	Family. Marriage. Woman.
HV	Social pathology.
L	Education.
M	Music.
N	Fine arts.
P	Philology and linguistics.
Q	Science. General.
QA	Mathematics.
QB	Astronomy.
QC	Physics.
QD	Chemistry.
QE	Geology.
OH	Natural history.
OK	Botany.
QL	Zoology.
QM	Human anatomy.
QP	Physiology.
QR	Bacteriology.
R	Medicine. General.
S	Agriculture. General.
SB	Field crops. Horticulture. Landscape gardening. Pests and plant diseases.
SD	Forestry.
SF	Animal culture. Veterinary medicine.

SH	Fish culture and fisheries.	
SK	Hunting. Game protection.	
T	Technology. General.	
TA	Engineering. General.	
TC	Hydraulic engineering.	
TD	Sanitary and municipal engineering.	
TE	Roads and pavements.	
TF	Railroads.	
TG	Bridges and roofs.	
TH	Building construction.	
TJ	Mechanical engineering.	
TK	Electrical engineering and industries.	
TL	Motor vehicles. Cycles. Aeronautics.	
TN	Mineral industries. Mining and Metallurgy.	
TP	Chemical technology.	
TR	Photography.	
TS	Manufactures.	
TT	Trades.	
TX	Domestic science.	
U	Military science. General.	
V	Naval science. General.	
Dewey Classification		
000	GENERAL WORKS—	
010	Bibliography	
020	Library economy	
030	General cyclopedias	
040	General collected essays	
050	General periodicals	
060	General societies	
070	Newspapers	
080	Special libraries. Polygraphy.	
090	Book rarities	
100	PHILOSOPHY—	
110	Metaphysics	
120	Special metaphysical topics	
130	Mind and body	
140	Philosophical systems	
150	Mental faculties. Psychology	
160	Logic	
170	Ethics	
180	Ancient philosophers	
190	Modern philosophers	
200	RELIGION—	
210	Natural theology	
220	Bible	
230	Doctrinal. Dogmatics. Theology	
240	Devotional. Practical	
250	Homiletic. Pastoral. Parochial	
260	Church. Institutions. Work	
270	Religious history	
280	Christian churches and sects	
290	Ethnic. Non-Christian	
300	SOCIOLOGY—	
310	Statistics	
320	Political science	
330	Political economy	
340	Law	
350	Administration	
360	Associations. Institutions	
370	Education	
380	Commerce. Communication Customs. Costumes. Folklore	
390		
400	PHILOLOGY—	
410	Comparative	
420	English	
430	German	
440	French	
450	Italian	
460	Spanish	
470	Latin	
480	Greek	
490	Minor Languages	
500	NATURAL SCIENCE—	
510	Mathematics	
520	Astronomy	
530	Physics	
540	Chemistry	
550	Geology	
560	Paleontology	
570	Biology	
580	Botany	
590	Zoology	
600	USEFUL ARTS—	
610	Medicine	
620	Engineering	
630	Agriculture	
640	Domestic economy	
650	Communication. Commerce	
660	Chemical technology	
670	Manufactures	
680	Mechanic trades	
690	Building	
700	FINE ARTS—	
710	Landscape gardening	
720	Architecture	
730	Sculpture	
740	Drawing. Decoration. Design	
750	Painting	
760	Engraving	
770	Photography	
780	Music	
790	Amusement	
800	LITERATURE—	
810	American	
820	English	
830	German	
840	French	
850	Italian	
860	Spanish	
870	Latin	
880	Greek	
890	Minor languages	
900	HISTORY—	
910	Geography and travels	
920	Biography	
930	Ancient history	
940	Modern	
950	Europe	
960	Asia	
970	Africa	
980	North America	
990	South America	
	Oceania and polar regions	

Say you saw it advertised in the SCIENCE NEWS-Letter



Man's Age Extended

(Continued from page 398)

Piltdown man, a time sufficient in his opinion for primitive man to assume the characteristics which distinguish him from the apes.

That Asia is the place to look for the ancestor of man is the belief of both Prof. Osborn and Dr. Gregory. There on the open plains of that continent, now the home of the yellow race and one of the most inaccessible parts of the globe, the Dawn Men lived and grew, and became men because of the hard life that they lived. Existence on the open plains was more hazardous and exciting than in the forests to the south, where the ape cousins of the dawn men were living a life of comparatively little exertion. The dawn men had to use their gray matter, and brains, like muscles, grow when used. The human race, still at its best in the temperate zones, has the hardships of the Asiatic plains to thank for its large heads, progressive actions and mental superiority to the best of the animal world.

Asia Early Home

So convinced have Prof. Osborn and other members of the American

Museum of Natural History been of the existence of the dawn men in Asia that the elaborate and ambitious expeditions into Asia's past that have been made under the leadership of Roy Chapman Andrews have been particularly instructed to be on the lookout for traces of the ancestors of modern man. And the American Museum scientists have not been unsuccessful, for they brought back flint implements and other cultural remains from different localities in Mongolia and China. These, however, are assigned to the Stone Age, a period in human evolution that is much more recent than the time of the dawn men.

But out of China, land of mystery, there have come dragon's bones. The yellow men use ground-up fossil bones as medicine. Over twenty years ago an eminent German paleontologist purchased in a Pekin drug-store a fossil tooth that he declared was probably that of an ancient man. That incident was recalled when last fall there came from Asia the news that Dr. J. G. Andersson of the Geological Survey of China and Dr. O. Zdansky of the University of Upsala had found evidences of the dawn man in Asia. Imbedded in geologic

deposits with the bones of various mammals they found two teeth which experts declare are essentially human. The strata of the earth in which these teeth were found are believed to have been laid down in the Upper Pliocene age some million to three million years ago. Before such antiquity, the ancient temples of China appear as new as the shacks of a boom town.

In Europe remains of ancient man have been found with considerable frequency. Whole and perfectly preserved skeletons of Neanderthal men have been unearthed at various localities. In the caves of southern France and Spain there have been found the earthly remains of the artistic Cro-Magnons, that skillful race that most anthropologists believe to have been in direct ancestral line of modern man. Long before these early men there must have lived in England some sort of human race, for among Pliocene strata along the coast of Sussex there are found worked flints considered to be of human manufacture.

To the Old World, therefore, the birthplace of man has been assigned. The most generally accepted location

(Just turn the page)

Man's Age Extended

(Continued from page 403)

of the human cradle is in Asia, from whence man roamed to Europe, Africa, and the various island of the East.

For the New World anthropologists have in the past held out little assurance of man any older than the Indians, who some twenty-five thousand years ago came from Asia; and yet there have been reported from various localities in America discoveries which may bring America into the picture of man's past.

Is it possible, then, that the dawn men of Asia, hardened to adventure and eager for new experiences, crossed to America as their Indian successors did many thousands of years later? In Oklahoma Texas, New Mexico and Florida there have appeared during the past few years other evidences that primitive man lived in America at a vastly earlier time than is believed by most scientific men. Two scientists of the Colorado Museum of Natural History, J. D. Figgins and Harold J. Cook, have obtained from three localities arrowheads in close association with extinct animals. At one place along the Lone Wolf Creek near the town of Colorado, Texas,



NATURE STUDY SUPPLIES

**Collecting Utensils, Breeding Cages,
Insect Cases, Cabinets, Aquaria,
Dissecting Instruments, Micro-
scopes, Plant Presses, etc.**



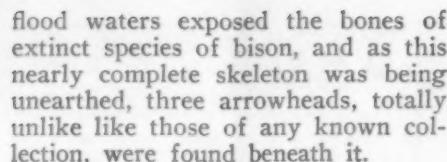
Complete Collections of Natural History Specimens and single Specimens.

New edition of our illustrated Naturalists' Supplies catalogue upon application.

**The KNY-Scheerer Corporation
of America**

Department of Natural Science

10-14 West 25th Street
New York City, N. Y.



In a sand and gravel pit at Frederick, Okla., primitive grinding instruments as well as arrowheads were found in strata of such antiquity that they are assigned to the Great Ice Age when prehistoric elephants and mastodons roamed the land. Real estate booms have not been the only product of Florida in past years, for from the drainage ditches of realtors at Melbourne and Vero on the east coast of central Florida, a Smithsonian Institution expedition unearthed a skull and stone arrowheads in close association with the bones and teeth of mammoths, mastodons and other prehistoric animals. Such recent discoveries recall less authenticated and earlier reports of evidences of ancient man in America. The charcoal evidence of a prehistoric fire was unearthed several years ago beneath a mastodon in New York state and an arrowhead was reported discovered in close association with an extinct bison in Kansas. Thus, it may be that America as well as Asia and Europe will play its part in the pushing back through millions of years the antiquity of man.

Earth's Age Greater

While the new discoveries of human and pro-human teeth and artifacts have been instrumental in increasing man's antiquity, the great expansion in geological ideas of the earth's antiquity have played their part. A few years ago the entire age of the earth was reckoned at less than a hundred million years. The most widely accepted estimates of the earth's age were based on the rate at which the great river systems of the world are carrying the silt and soil of the land that they drain and laying it down as deposits along the shores of the continents. The geologists assumed that the sedimentary rocks of the earth's crust formed in the same way were laid down at the same rate as those now in the making. But then, new investigations and discoveries indicated that rocks today are being formed much faster than they were in ancient eras.

The astronomers, too, demanded a longer time for the age of the earth since such a short life as one hundred million years did not fit in with the facts of the rest of the universe. So the radioactive minerals

containing uranium, thorium and radium were hit upon as time clocks of the earth. Scientists found that no matter how the radioactive minerals were treated, no matter how they were compressed, or heated, or cooled, they went on disintegrating at precisely the same rate. They assumed that they had been disintegrating at the same rate so long as the earth has existed. And then, cleverly, by measuring the quantities of the disintegration products of these radioactive minerals in the crust of the earth they arrived at an estimate of the age of the various rocks of the earth. The late Prof. Joseph Barrell of Yale, using his radium chronometer, estimated that the oldest Precambrian rocks, the original crust of the earth, were molten 1,400,000,000 years ago. The Tertiary period, that interval in the earth's history that immediately precedes the time in which we live, was assigned a scant three million years in the earlier estimates of the earth's age, whereas Professor Barrell set down its duration as about sixty million years.

The human race therefore has grown more venerable due to these increases in the estimates of the age of the earth. But the new discoveries in Asia, Europe and America will also undoubtedly play their part in making us realize what an ancient institution the human race is.

Contemplating the lowly estate from which the human race has risen and the vast expanses of time during its evolution, modern man from his pinnacle overlooking the rest of the animal kingdom may hopefully predict the future.

Science News-Letter, June 25, 1922

Mail to SCIENCE SERVICE,
21st & B Sts., Washington, D. C.

For Non-Subscribers Only: To receive *Science News-Letter* for the next 52 weeks, send \$5 and sign below.

(If you are not fully convinced, send \$1 for

Anniversaries of Science

June 29, 1895—Thomas Henry Huxley, naturalist and protagonist of Darwin's theory of evolution, died.

But if I may speak of the objects I have had more or less definitely in view since I began the ascent of my hillock, they are briefly these: To promote the increase of natural knowledge and to forward the application of scientific methods of investigation to all the problems of life to the best of my ability, in the conviction which has grown with my growth and strengthened with my strength, that there is no alleviation for the sufferings of mankind except veracity of thought and of action, and the resolute facing of the world as it is when the garment of make-believe by which pious hands have hidden its uglier features is stripped off.

It is with this intent that I have subordinated any reasonable, or unreasonable, ambition for scientific fame which I may have permitted myself to entertain to other ends, to the popularization of science; to the development and organization of scientific education; to the endless series of battles and skirmishes over evolution; and to untiring opposition to that ecclesiastical spirit, that clericalism, which in England, as everywhere else, and to whatever denomination it may belong, is the deadly enemy of science.

—Huxley: *Autobiography*.

Science News-Letter, June 25, 1927

July 1, 1811—Publication by Avogadro of a paper in which he first used the word "molecule" and in which he showed that many elementary molecules contain more than one atom marked an advance in theoretical chemistry.

M. Gay-Lussac has shown in an interesting Memoir . . . that gases always unite in a very simple proportion by volume, and that when the result of the union is a gas, its volume also is very simply related to those of its components. But the quantitative proportions of substances in compounds seem only to depend on the relative number of molecules which combine, and on the number of composite molecules which result. It must then be admitted that very simple relations also exist between the volumes of gaseous substances and the numbers of simple or compound molecules which form them. The first hypothesis to present itself in this connection, and apparently even the only admissible one, is the supposition that the number of integral molecules in any gas is always the same for equal volumes, or always proportional to the volumes. Indeed, if we were to suppose that the number of molecules contained in a given volume were different for different gases, it would scarcely be possible to conceive that the law regulating the distance of molecules could give in all cases as simple as those which the facts just detailed compel us to acknowledge between the volume and the number of molecules.

—Avogadro: *Essay on a Manner of Determining the Relative Masses of the Elementary Molecules of Bodies and the Proportions in which they Enter into these Compounds*.

Science News-Letter, June 25, 1927

July 2, 1897—The patent for the Wireless Telegraph was granted to Marconi in England.

Wireless Telegraphy, or telegraphing without any wires at all, from one point to another through space, is the most modern and startling development in telegraphy. To the average mind this is highly suggestive of scientific imposition, so intangible and unknown are the physical forces by which it is rendered possible, and yet this is one of the late achievements of the Nineteenth Century. . . .

In March, 1899, Signor Guglielmo Marconi, an Italian student, then residing in England, successfully communicated between South Foreland, County of Kent, and Boulogne-sur-Mer, in France, a distance of thirty-two miles across the English Channel. . . . The Marconi system of wireless telegraphy was practically employed with useful effect April 29, 1899, on the "Goodwin Sands" light-ship to telegraph for assistance when in collision twelve miles from land and in danger of sinking. It was also used in October, 1899, on board the "Grande Duchesse" to report the international yacht race between the "Columbia" and the "Shamrock" at Sandy Hook. Lord Roberts also made good use of it in his South African campaign against the Boers. According to Signor Marconi its present range is limited to eighty-six miles, but it is expected that this will be soon extended to 150 miles.

Byrn: *Progress of Invention in the Nineteenth Century* (1900).

Science News-Letter, June 25, 1927

ASTRONOMY

Will See Eclipse From Air

For the first time in history an astronomer will observe a total eclipse of the sun from his own airplane. Gerald Merton, F. R. A. S., will fly over England to see and photograph the eclipse of June 29. Merton was a pilot in the Royal Air force during the war. He recently bought an airplane of his own for scientific use. With him will be Maj. P. H. Hepburn, F. R. A. S., war aviator and formerly president of the British Astronomical Association.

Another attempt to photograph the eclipse from the air, and so to rise above the clouds that may prevent terrestrial observations, will be made by two astronomers from the Royal Observatory at Greenwich, William M. H. Greaves, chief assistant, and William W. Witchell, head of the Observatory's Magnetic and Meteorological Branch. They will fly in a Handley-Page air liner provided by a London newspaper. At first, it was stated they had agreed to make the trip merely for the fun of it, but that now they expect to secure good observations.

With the large machine they have chosen, they hope that difficulties from vibration will be minimized, and the pilot thinks that he will be able to keep the machine pointed at the sun.

Science News-Letter, June 25, 1927

First Glances at New Books

AN INTRODUCTION TO BIOLOGY—Alfred C. Kinsey—*Lippincott's*. This book is designed for use as a high school text, but it is ambitious in its range of topics. It includes not only the customary sections on classification, structure and functions of plants and animals and a discussion of hygiene, but also branches out into distribution and ecology, and especially into considerations of the relations between the various organisms and man. It is also an excellent example of the reaction that seems to be following the epidemic of timid deletions, by text-book writers, following the anti-evolution outbreak. More space than ever is devoted to evolution, and the treatment of this topic is one of the best-thought-out in the whole work. And whether it was deliberate or only a "happenstance," the prominence given in this section to the work of the monk Mendel can hardly do otherwise than make Fundamentalist inquisitors squirm.

Science News-Letter, June 25, 1927

THE SEVEN SEALS OF SCIENCE—Joseph Mayer—*Century* (\$3.50). An outline of the history and achievements of mathematics, astronomy, physics, chemistry, biology, geology and psychology, showing their relations to each other and to other fields of knowledge. "Social studies," he says, "if they are to be worthy of the name of science, must build upon the natural sciences and particularly upon geology, biology and psychology."

Science News-Letter, June 25, 1927

SCIENCE OF TODAY — Sir Oliver Lodge—*Harper* (\$1). A brief and readable account of modern atomic physics by an author who contributed much to the development of its early stages.

Science News-Letter, June 25, 1927

THE WAR ON MODERN SCIENCE—Maynard Shipley—*Knopf* (\$3). A review of the warfare of the Fundamentalists against the teachings of science. Data from all parts of the United States are presented, and the situation presented as it stood at the close of the year 1926.

Science News-Letter, June 25, 1927

NEW CONCEPTIONS IN COLLOIDAL CHEMISTRY — Herbert Freundlich—*Dutton* (\$2). An authoritative account of some of the modern concepts in the chemistry of colloids.

Science News-Letter, June 25, 1927

Books that Make Good Reading in Summer—



All of These Are "Right" Books

TREE ANCESTORS, by EDWARD WILBUR BERRY, Johns Hopkins University.

Form a more intimate acquaintance with trees through this book. Learn the fascinating story of their development through the ages. Satisfy your curiosity to know how old some of our common trees are and how they came to be scattered about around the world. No need to know botany or biology to get full value from this book.

270 Pages

Price \$3.00

48 Illustrations

METEORS, by CHARLES P. OLIVIER, Astronomer of the McCormick Observatory.

Chances are there is no book in your library like this. It is the first work on meteors since 1871. And it was selected as one of the 37 "Most Notable Books" published in America in 1925.

It gives detailed instructions for amateur observations of meteors and discloses the fascination of the heavens to those who can appreciate Nature's wonders of the night.

Blue silk, gold stamped design 32 Illustrations
Price \$6.00

THE BEAVER, by EDWARD R. WARREN.

The busy little beaver is a fascinating little animal when you get to know him.

This study of his life habits is based on intimate observations of the beaver in his native habitat. You'll find yourself looking him up, once you've read the book. Scientifically sound, yet written for the amateur naturalist.

144 Illustrations

Vellum de Luxe

Bibliography

Price \$3.00

Order from your bookseller or use the coupon

THE WILLIAMS & WILKINS COMPANY,
Baltimore, Maryland.

Send me, post paid, copies of the books as checked.

<input type="checkbox"/>	Tree Ancestors	\$3.00
<input type="checkbox"/>	Naturalist's Guide	\$8.00
<input type="checkbox"/>	The Beaver	\$3.00
<input type="checkbox"/>	Meteors	\$6.00
<input type="checkbox"/>	Research Narratives, 2 Volumes	\$1.50

Name.....

Address.....

SUMMER is no time for heavy reading.

One wants a companionable book for leisure hours, light, entertaining reading. Reading without absorbing some new knowledge during the process is not for the serious-minded, though. The "right" book, then, combines entertaining reading with informative reading.

In summer, too, the urge to be out-of-doors is stronger. Then why not books that will liven one's appreciation of what is going on in Nature's Outdoor Show?

NATURALIST'S GUIDE TO THE AMERICAS.

If you want to sit in your favorite chair some cool evening and travel through the great natural areas of North America, the adjacent islands, and northern South America this is the book to transport you.

The product of the Ecological Society of America's stupendous survey of the flora and fauna of these countries. All in a single volume of 800 pages. A book that the whole family will enjoy.

*Green limp fabrikoid, gold stamped
Illustrated* Indexed
Price \$8.00

RESEARCH NARRATIVES.

Two little volumes, each containing fifty true stories of invention, discovery and research. Stories that the whole family will read and reread. Compiled by Director Alfred Flinn of Engineering Foundation.

Volume I, 50 cents; Volume II, \$1.00

